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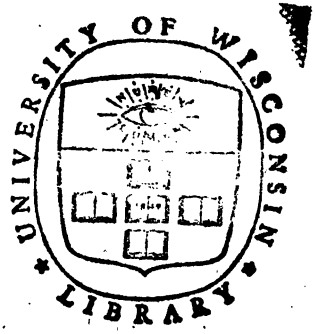
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FOR

AMERICAN HUSBANDMEN,

WITH

COMMUNICATIONS

TO THE

PENNSYLVANIA

Agricultural Society.

BY ORDER OF THE DIRECTORS.

PHILADELPHIA:
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1827.

Agric
More than half of the subjects treated of in this Work are not to be found under the head of contents.

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ORIGINAL NOTICES

ON

CROPS AND MANURES,

BY PRACTICAL MEN.

On the ill effects of soiling Cattle—the total failure of Salt, and the successful application of Bone Dust as manure—the excellence of Mangel Wurtzel and Cabbages as Winter food for live stock—the degeneracy produced by breeding in-and-in—the advantageous results of judicious Crossing evinced in the Turf horse and other breeds. By a Gentleman well known in Great Britain as an enlightened agriculturist, and successful breeder of Neat Cattle and Sheep.

Marton Lodge, near Stockton on Tees,
(England.)

DEAR SIR,—Accept my sincere thanks for your polite and friendly letter, and for your interesting present of the "Memoirs of the Pennsylvania Agricultural Society." I have read them with great pleasure; they contain much information respecting the state of agriculture in the United States, which is both new and gratifying to me. I rejoice that you are animated by such zeal and spirit for improvement. If the Atlantic did not intervene between us, I would

undertake a journey to see you and your important agricultural improvements. I fear, however, that we shall never meet. I have desired one of my sons, who has a taste for drawing, to make a sketch of one of my cows in her ordinary condition, when heavy in calf, and giving milk, which I now inclose; and I request you to do me the honour to accept it—It will give you a better idea of my stock than any description can convey, although my son has scarcely done the cow justice in the representation. You know that I purchased Mr. Charles Colling's BEST cows; and you will be able to form some opinion from this sketch, whether the Shorthorns, which have been imported into America, are of the best kind. A change *of bull is indispensably necessary;* FOR "IN AND IN BREEDING" very soon creates degeneracy.

I am deeply sensible of the handsome manner in which you have mentioned my name in the "Memoirs," and of the honour you have done me by inserting my letter. You request me to criticize them, but I do not feel myself competent to point out any defects in your system of agriculture; and the style of the Memoirs merits unqualified praise. The science of agriculture cannot be reduced to any certain and fixed principles like other sciences, on account of the infinite variety of soils, and the difference of climate. Your summers are much hotter and drier than ours, and your winters are more severe. In our summers, the thermometer of Fahrenheit seldom rises to eighty in the shade, and in winter it is seldom much below the freezing point. Here we cannot grow Indian

corn, which is so productive and so valuable. Our climate is perhaps better suited to the growth of turnips, and our pastures in summer are perhaps more verdant and succulent than yours, from the greater moisture occasioned by our insular situation. I have travelled much on the Continent of Europe, and on my return I have always admired the superior verdure of our English pastures. You read much in our English publications of the expediency of *soiling cattle* in the house during the whole of the year. I do not approve of this practice, for it is surely an unnatural one, as air and exercise, and the selection of their own food, must benefit cattle, as other animals are benefited by them. I can say from actual *experience* of the two systems, that cattle *thrive much better* in the fields during the period from the middle of May to the middle of November, than they do when confined in a house. *Soiling cattle* is very little practised in England. We read in some books, that mangel wurtzel is an unwholesome food for cattle, but I agree entirely with you that it is a most valuable and nutritive food. Many of our ablest writers on Agriculture have been theoretical men, and not good *practical* farmers—Hence so many errors in the books. In the "Memoirs" you have inserted an able letter from Sir John S. Sebright, to the late Sir Joseph Banks, on the art of breeding domestic animals. Our best breeds of horses for the carriage, the road, the chase, &c., our cattle, sheep, pigs, and dogs, have all derived their improvement from *judicious* crossing. All the cases of failure have been owing alone to *injudicious* crossing. You know that I

have had long *experience* on these subjects, and have been intimately acquainted with our great improvers of cattle, sheep, and horses.

Many of our writers on agricultural subjects, such as Sir John Sinclair, Mr. Curwen, and many others, have strongly recommended salt as a valuable manure. I have tried the experiment myself, and have seen it tried by others on various soils and in various quantities; but I could never perceive the least benefit. As a condiment for cattle and sheep, it is very beneficial by promoting digestion when used in moderate quantities.

I do not observe in the "Memoirs," any mention of *cabbages* as a winter food for neat cattle and sheep—Perhaps your climate is not favourable to their growth. Here the *large Scotch or drum-headed cabbage* is a most valuable winter food, as it produces a greater weight per acre than turnips. It is peculiarly valuable in some districts, for it will flourish on strong soils which are not proper for turnips. You are so perfectly well informed of the state of British agriculture, that I do not know whether I can give you any new information, unless it be as to the recent use of *bones* as a manure for turnips, and the use in the north of England of the *improved ploughs* made *wholly* of *iron*, without any wood whatever. The bones are first ground to powder in a mill constructed for that purpose, and in a powdered state are sown by the drill along with the turnip seed. Very luxuriant crops of turnips are thus grown without any other manure. Bones have become an article of commerce, and large quantities are imported from various parts of Europe.

I shall always be happy to be honoured by your correspondence, and I remain,

Dear Sir,

Most respectfully yours,

BART'W. RUDD.

P. S.—You have my entire permission to publish this letter.

To John Hare Powel, Esq., Powelton, (U. S.)

Philadelphia County, Feb. 1, 1827.

JOHN HARE POWEL, ESQ.

SIR,—I cultivated some acres of woad in the State of Ohio, which I cut six times during the season; it produced about 30 cwt. to the acre, for which I received, when brought to market, 12½ cents per pound, equal to $420 per acre.

I have been accustomed to its cultivation in England, where I used it for thirty years, as a manufacturer. The soil of America is quite as well adapted, and the climate of the middle, southern and western states, is better suited to its growth, than that of Great Britain. The colouring matter was much stronger—the plant was more vigorous and rapid in its growth, and its product was larger than that to which I have been accustomed in Great Britain.

It prefers a deep, rich, and light alluvial soil —its tap root extends a considerable distance below the surface. Fine tilth is necessary, but it may, like Indian corn, be grown upon a sward reversed. I have found it a better practice to sow the seeds in beds, late in the Autumn, or early in the Spring, if the climate be severe in

winter. When the plants have tap roots about four inches long, they should be set out, at the distance of 8 to 10 inches in rows—sufficiently wide apart to admit either a horse and cultivator, or a ten inch hoe, as the husbandman shall determine, to keep them free from weeds. When the leaves are about 9 inches long, but always before their colour begins to change in any part, they must be cut as spinach with a knife—placed in baskets, and carried into a barn, where they must be chopped forthwith, by means of a chaff cutter, or similar instrument, into pieces of about a quarter of an inch.

So soon as they have been thus prepared, they must be bruised by a roller or bark mill, before they shall have suffered from heating, which a very few hours would cause. The bruised matter must be rolled by the hand into balls of two or three inches diameter, according to the heat of the weather. Care must be taken to expose it *to the free operation of air*, whilst protected from moisture. When dry, it may be stored in heaps.

The subsequent crops may be twisted off, without the use of the knife, as the roots at the latter stages of their growth are sufficiently strong to resist the necessary force to remove the leaves. It may be sown broadcast, but from the extreme lightness of the seeds, great difficulty is found in distributing them equally. In this mode, of consequence, bare patches disfigure the field, and materially affect the amount of its product. The question whether the broadcast or drill system should be employed, must be determined by the relative value of labour and land.

I shall be very glad to communicate with any gentleman on its cultivation, as its importance to manufactures makes it an object of great interest at this time in America.

One bushel of seeds, if sown in drills, is sufficient for five acres—if sown broadcast, for one acre. It is to be observed, that the woad must undergo the process of *couching*, before it is fitted for the manufacturer.

J. ATHERSTONE.

On Guinea Corn—its cultivation, great product, and value as food for Cattle. By a Practical Farmer.

Guinea Corn has been found a valuable crop in South Carolina. It is believed that the climate of the eastern parts of Pennsylvania is well adapted to its growth. Its product on very rich land is said to exceed an hundred bushels per acre—its weight is greater than that of wheat—its farinaceous matter is exceedingly nutritious—its stalks and leaves are useful as food for cattle. Light alluvion is considered the best soil for its growth. It should be planted and cultivated in rows, as Indian corn. In July the heads appear—in August a part of them become ripe—in the course of September, the principal part of the crop is matured.

The portions which have become mature, are harvested in succession by cutting the stems. They are carried in baskets to a convenient position at the end of the rows—thence to a proper house or barn, where they are stirred occa-

sionally until they have become so dry as to be secured against fermentation. An half peck of seeds is sufficient for an acre, if it should be preferred to drill them as turnips. In the early stages of its growth, it appears feeble. After it has arrived at the height of two or three feet it grows vigorously, and becomes hardy as Indian corn.

The success of the crop depends much upon the fertility and preparation of the soil—upon frequent and light stirrings, and proper quantities of manure for the support of the plant.

A FARMER.

On Woad—its culture in Europe.

Woad is a biennial plant usually cultivated on the Continent of Europe, on light soils, reduced to fine tilth, and manured in the previous autumn. The seeds are sown in March or April, generally broadcast, and are harrowed and rolled as those of grass. Great attention is given to free the land from weeds in previous seasons, and to carefully destroy them as they *appear* during its growth. The leaves are gathered from June till September in the first year, and from June till August in the next, when the plant puts forth its flower stems.

The process by which woad is converted into the state fitted for the manufacturer, requires much experience and minute attention.

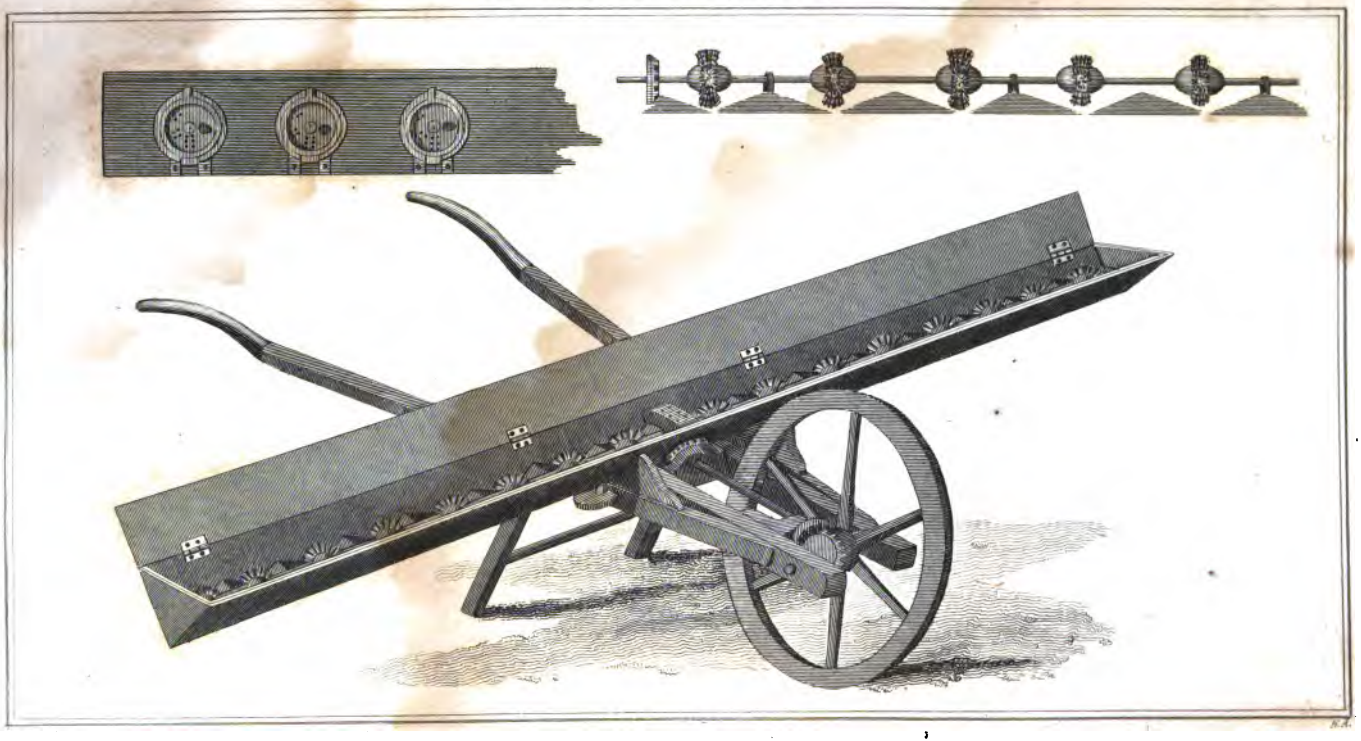
I have the honour to be, &c.

JOHN HARE POWEL.

Feb. 1, 1827.

To the President of the Pennsylvania Agricultural Society.

BENNET'S MACHINE.









On substitutes for Hay—Indian Corn sown broadcast on Fallow—its farinaceous product, and value as long fodder.

By John Hare Powel, Esq.

Powelton, Feb. 1, 1827.

The drought of the last Spring so much diminished the crops of hay, that various substitutes were suggested for long fodder. A field was ploughed early in June—part was manured with ashes—part with rotten horse dung—part with bones broken and strewed, at the rate of 250 bushels per acre—the ashes at the rate of 200—the horse dung in quantities equal to 350 bushels per acre.

Upon one acre of the field, three bushels of Indian corn, and a bushel of millet seeds, were sown together—the land was heavily harrowed and rolled. As the millet seeds were bad, and the Indian corn had been a long time thrashed, twice the quantity was sown, which it was supposed would vegetate. The millet seeds principally failed—Not more than a third of the corn appeared above the ground.

Upon adjoining portions of the field, ruta baga, yellow Scotch, and flat red top turnip seeds were sown with Bennett's trough, at the rate of five pounds per acre.

The turnip seeds were lightly harrowed and rolled—the portions of the field so occupied, were in a state of as high cultivation as a garden. When the leaves were about an inch and an half long, all the turnips were harrowed with a light seed harrow. For some time they appeared

feeble, but they revived in forty-eight hours, and grew more luxuriantly than I had hoped.

I caused a line to be stretched along the field, by which a man was enabled to scuffle rapidly, a space equal to twelve inches, as he advanced in a straight direction. The line was removed until rows 6 inches wide were made in succession, throughout the field, leaving the plants as if they had been regularly drilled, thus diminishing the expense of hoeing, which, by American labourers, is little understood.

It will be obviously remarked, they might have been drilled by a regular machine. I had so often been disappointed in growing turnips in drills, from the failure of the plants, that I was determined to secure the crop if practicable, at the expense of the larger quantity of seed. The plants were subsequently thinned.

The ruta baga yielded at the rate of about 400 bushels per acre—neither the yellow Scotch turnips nor white turnips were worth gathering. The Indian corn, although intended to be taken whilst green for long fodder, was allowed to become mature, as it promised to produce much grain. It was cut close to the ground, and bound in the usual mode in small stacks. It yielded thirty bushels of corn—a very large quantity of long fodder, which was estimated at the time, and has since, by the number of cattle which it has supported, been considered equal to two and an half tons of hay. No labour was applied to the Indian corn after it was rolled, until it was gathered.

These experiments with Indian corn, Swedish turnips, yellow Scotch and white turnips, have

confirmed the opinions I have held, that turnips are not profitable in an Indian corn country, except with particular objects—more especially, as in this climate mangel wurtzel supply, at much less cost, the purposes which they are intended to meet.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On substitutes for Hay—Indian Corn sown broadcast on Rye stubble and sward—its product and value.

BY JOHN HARE POWEL, ESQ.

Powelton, Feb. 1, 1827.

After a rye crop had been taken, the richest part of the field was ploughed—yellow Scotch and white turnip seeds were sown with Bennett's trough, and were managed as before.

One acre of the same field was at the same time ploughed—four bushels of Indian corn were sown and ploughed under, with a very shallow furrow—an adjoining acre, which had not been previously ploughed, was sown with the same quantity of the same corn, which was in the same manner ploughed under with the stubble—it was all harrowed and rolled. The land had been limed five years since, and was in fine tilth. The turnips failed entirely—the corn vegetated regularly—covered the ground thickly, and put out tassels when five feet high. It was mown when in full blossom—treated exactly as hay; but from the succulence of the stalks, it required much

more time and attention, before it could be housed.

I found my cattle to-day contending for it eagerly, when portions of it were thrown before them in the midst of the *most fragrant* clover hay. The quantity was estimated at two tons per acre.

Upon another field, which, after having been fifteen years in common, was manured with oyster-shell lime at the rate of an hundred bushels per acre, I caused six bushels of corn to be sown immediately after the sward and lime had been reversed. The land was harrowed closely, and heavily rolled—the crop was mown and managed as that of the last field—its product was estimated at two tons and an half per acre.

In another part of the same field, manure taken *fresh* from the stable, was spread upon sward which had been limed as in the last instance. About three bushels of Indian corn were sown on the dung, and were ploughed under with the sward, which was after harrowed and rolled. Fewer seeds were used, as it was supposed the manure would cause most of them to vegetate vigorously.

This piece of land, although much shaded by a close row of trees on its southern boundary, produced more abundantly than the last. It was cut and managed as before. I am inclined to believe from the results of all these experiments, that four bushels of corn in that state of soundness, in which it is usually found after having been thrashed some months, is the proper quantity, or that three bushels from selected ears, would be sufficient. It must be observed, that

the latter part of the season was unusually favourable to the growth of Indian corn.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On substitutes for Hay—Millet, its value as long fodder—its injurious effects when cut late.

BY JOHN HARE POWEL, ESQ.

Powelton, Feb. 1, 1827.

Notwithstanding the success in the experiments with Indian corn, I should prefer millet as a substitute for hay, and I should have last year employed it, if I could have procured seeds of good quality. I have obtained, in various seasons, three tons of millet per acre—and in one, much more than that quantity, so far as it could be estimated by weighing one load, and keeping an accurate account of the rest of equal size.

I cultivated thirty acres of millet in 1823, and I should cultivate an equal quantity again, to supply the deficiencies occasioned by the failure of the young grass, of the preceding year.

I am not disposed to consider it a substitute for Indian corn as a farinaceous crop, for obvious reasons, which I have explained at length. Mr. Dupont, of Delaware, has cultivated it extensively, and continues to entertain the highest opinion of its value. I am not aware of any evil attending its use as long fodder, except when it has been allowed to become ripe; some danger is then to be apprehended to neat cattle, from swallowing the grain unbroken, which, adhering

closely in the stomach, cannot be ejected for the purpose of rumination—in one instance I have known it to cause death. Similar effects are sometimes produced by feeding cattle upon Indian meal, without *mixture* with cut hay or straw. The animal having been tied in a stall, and tempted to consume as much as possible—the system is made sluggish by the want of exercise—the stomach loaded with fat, becomes unable to perform its office—the indigestible meal coheres, causes sometimes apoplexy, and always injury to the beast.

Graziers, feeders, and dairy farmers, have various appellations for the diseases, with which their animals are assailed; and if the nostrums and hard names which cattle doctors have given in English books were to be regarded, the maladies of neat cattle might be considered almost as numerous as those of our own race—whereas in fact they are very few, exhibiting in different stages various symptoms, in most cases to be ascribed to sudden changes of temperature—to bad management—to external injuries and excess, or deficiency in the supply of food. Free circulation of air—due proportions of succulent and dry food—regular exercise, with protection merely *from wet*, are the best preventives—copious bleeding—large and repeated doses of Glauber salts in molasses and warm water, followed by castor oil and sulphur, are generally the best remedies for disease.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

European practices inapplicable in America—on Manures, recent and old—Composts, their application and cost.

By John Hare Powel, Esq.

Powelton, Feb. 1, 1827.

I have long contended that British practices or European systems of husbandry, can seldom be profitably applied upon American farms. In no instance, I am led to apprehend, is this remark more just, than in the preparation and use of animal manures. Compost heaps, and the various compounds which have been suggested in Europe as substitutes for the common offal, with which most *well regulated* American farms *may* be brought to abound, I conceive it unwise to employ, in a country where the relative prices of labour and land are in ratios, inverse to those which have given rise to expedients, incompatible with our circumstances, and ruinous in a climate marked by the extremes of heat and cold.

It has been alleged, that where old grass lands require top dressing, composts become the most effective and cheapest manures. I am prepared to admit, that a compost heap which can be obtained without *much labour* or expense in *its preparation*, should always be regarded as an important item in the economy of the farm. The commixture of earth, animal matter, green weeds, or other vegetables, should never be neglected, provided they be at hand—but I am assured they should not be "*manufactured*" by re-

peated moving, but should be left to the operation of heat and moisture, until they can be employed, and if practicable, be *incorporated* intimately with the soil.

Recent animal manures I have always considered the most effective and the most lasting, whether they be applied to the surface, or be turned under by the plough.

Parts of my grass lands have been, during several years, subjected to a variety of experiments, which have confirmed the opinions I advance. In March, 1824, I caused "*long dung*" to be spread upon a field of fifteen acres, adjoining one of the same extent, upon which equal quantities of rotten manure had, early in the Autumn, been strewed. The field was harrowed—the long straw was collected by an horse rake—was returned to the barn yard early in May, and placed in the bottom of a deep trench, where it was saturated with the water escaping from the stables and dung heaps on the margin of the fold. The land upon which the recent dung had been spread, produced certainly much the larger crop of grass. In 1825, similar experiments were made by putting rotten manure in the Autumn, and fresh manure in the Spring, upon equal parts of the field, to which the rotten manure alone had been applied in the Autumn of 1823—similar results were obtained.

In the last year the same experiment was tried by covering portions of the other field with old manure in the Autumn, and a part with long dung in the Spring—the results were as they had been before.

The straw having been soaked and bleached by exposure, was loosened by the harrow—collected by an horse rake, and after was used throughout the summer, as litter for bulls, which are necessarily confined upon a breeding farm.

The crop of grass, in despite of the extraordinary drought, much exceeded any which I have ever had from the same land.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On Meadow Lands—Ill effects of close feeding at certain seasons—Advantageous results of repeated experiments in protecting the soil by after grass—Its value and use.

BY JOHN HARE POWEL, ESQ.

Powelton, Feb. 1, 1827.

Long experience in the management of alluvial meadow had induced me to believe that the injuries apparent after a succession of hay crops, proceed not so much from the effects of the scythe, as from the continued and close feeding, which has generally been practised in this county by *tenants* who occupy much the larger portion of the marsh land.

It was supposed, that the extreme heat and drought, which generally succeed the season, at which the first crop is taken, are particularly injurious to grasses upon such soils.

I caused a grazing farm of nearly an hundred

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acres of alluvion, which had been subjected to every evil which the cupidity of the tenant could produce, to be mown for hay, at the time when the grass was in full bloom. No animal was allowed to feed upon it until the latter part of October, when its luxuriant pasturage afforded a larger return than I could have obtained, had the usual system been observed, in depasturing it throughout the term of the greatest heat.

In the succeeding year, the same practice was observed with similar success. The land was evidently improved, and has since commanded higher rent, although the price of meadow land has not generally increased.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On Grass Lands—Clover—Sowing, &c.

BY JOHN HARE POWEL, ESQ.

Powelton, Feb. 1, 1827.

It is admitted, that in our climate, one of the most difficult items of the husbandman's art, is the successful "*laying down*" of grass lands. Without adverting to the necessity of fine tilth—the fit state of the soil, and proper selection of seeds, I would suggest that not more than half of the proper quantity, whether of clover, orchard grass, timothy, or herd's grass, is usually sown upon American farms.

In England, where clover is less injured by drought in the early seasons of its growth—by

heat when the crop is removed—or by the effects of frost, succeeded by sudden thaws in the Winter and Spring, a peck of clover, mixed with a proportionate quantity of other grass seeds, is usually sown upon an acre of land.

In this climate I have found three half pecks of clover seeds, when combined even with two bushels of orchard grass seeds, in no instance too much for one acre of land.

Light harrowing, and rolling of the grain crop, *if the weather and soil be in a proper state*, immediately after the grass seeds are sown, I have always considered the best mode of securing their vegetation, as well as the best means of *improving the grain.*

It has often been recommended to harrow in August with a heavy brake, and to sow again those parts of the field which appear bare of grass after the crop of grain has been removed. I have never succeeded in the attempt, except when small quantities of manure were soon after scattered over the parts, which had been so treated, and in such cases I have never failed.

I am inclined to believe, that autumnal top-dressing, *with long manure*, may with great profit be applied to protect the *young clover*, especially if the improvident husbandman has allowed it to be fed closely, by horses or sheep.

In addition to the great advantage arising from the stalks of the hay being finer and more valuable as food, an important object is attained by using abundant supplies of seed in our climate. The land being more closely covered with the larger quantity of plants, is not so much exposed

immediately after the crop has been taken, and of consequence is less exhausted during the season of greatest heat, by the rays of the sun.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On Grasses—Substitutes for Red Clover—Lucerne—Saintfoin.

BY JOHN HARE POWEL, ESQ.

Powelton, Feb. 1, 1827.

We have long sought a substitute for red clover, and notwithstanding the efforts which have been made for the introduction of Lucerne and rye grass, I am disposed to think that the agriculturists of America have been generally inattentive to this important subject, involving both the support of our live stock, and to a great extent, the manure for our fields. Lucerne requires more labour and accuracy of tillage than most farmers in this state have either the means or the disposition to apply. Its principal use is in soiling, which no husbandman in Pennsylvania, notwithstanding all that has been written or said, has ever systematically pursued throughout a succession of years.

Rye grass has not succeeded in the few instances in which I have known it tried.

Saintfoin has been neglected, most probably, in consequence of the failures proceeding from the age of the seeds—they seldom vegetate when

more than a year old, and hence fail when they have reached us in the *common* course with *dealers'* supplies.

It is found in various parts of Europe—in Germany—Switzerland—England and France. It is considered one of the most valuable sorts of herbage which can be cultivated on dry soils. Its long root insinuates itself to a great depth in gravelly and rocky lands. Its stems and abundant leaves afford succulent pasturage, as well as excellent hay. Deep calcareous soils are preferred for its growth. If the ground be prepared by *very deep ploughing and proper cleansing crops*, the product is unusually great.

Its hardiness in resisting the effects of frost and drought, would render it peculiarly useful in American husbandry. It should be sown as early as practicable in the Spring, with half the usual quantity of barley or oats. Four bushels are the proper quantity of seeds for an acre. Their quality may be known by the brightness of the capsules, the fulness of the kernels, and by their colour, which should be blue-grey or yellowish-red. As the seeds are large, and are enveloped by thick capsules, they *must be covered at greater depth, and with more than usual care.* The roller should be applied, if the soil and weather be in proper state.

The price in England is from five to six shillings sterling per bushel. Saintfoin is managed as clover, to which it is equal in nutrition and product. It affords valuable after grass, which, it is to be lamented, our husbandmen too much disregard as the means of saving fodder, and

keeping their breeding ewes until the season of greatest trial, on the approach of the Spring.

This valuable plant continues during nine or ten years in the soil. My attempts to cultivate it have not been successful; as all the seeds which I had procured were old and did not grow. I abandoned Lucerne, as it required more labour than I was disposed to apply.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On Orchard Grass—Manner of cultivation—securing the seeds—Quantity sown—Season and mode—Causes of failure—Product and value for pasturage and hay—its nutritive qualities, and superiority over timothy, both when green and dry.

BY LOYD JONES, ESQ.

Montgomery County, (Pennsylvania,)
February 5th, 1827.

DEAR SIR,—I have cultivated orchard grass for five and twenty years. My crops failed from the bad quality of the seeds, until they were secured by myself. When they are in the state at which they can be shaken from the heads, the stems are cut by a skilful cradler just above the tops of the under grass. After some practice, he is enabled to catch with his left hand the portions taken by the cradle, and to place them regularly as he advances. They are immediately bound in sheaves large as a man's leg. Double

swarths are afterwards mown with a naked scythe to remove the under grass, and leave at proper distances throughout the field, openings upon which the sheaves are shocked. They remain in this state from eight to ten days, until sufficiently dry to be carried to the barn, where they are forthwith thrashed to guard against heating, the great source of injury to the seeds of this valuable crop. The usual manner of securing them, by putting the sheaves into the mow, is, I am satisfied, the most effectual mode to destroy the principle of vegetation, as they can rarely be so treated, without being mow-burned.

After having been thrashed, they should be strewed upon the barn floor—occasionally stirred if the quantity be large, during eight or ten days, until they are perfectly dry—without this precaution they would inevitably be heated.

The under grass should all be mown for hay, as soon as possible, after the seeds have been harvested. If it be allowed to stand but for a few days, it loses its nutritive properties—in fact dies, after having lost the heads. The hay thus made, and properly secured, although necessarily harsh from having been allowed to pass the stage of its growth when most succulent and nutritious, I have found good fodder, for both horses and neat cattle.

The product of seeds varies from ten to twenty bushels per acre. I have had in a very favourable season, twenty bushels upon land which would not have afforded, I think, ten of wheat. The product of this, as of all crops, depends much, of course, upon the season, and the pre-

paration of the land. The crop to which I advert, was purposely grown upon a poor soil, to show the excellence of the plant, and the fallacy of the assertion, that it required very rich land.

I sow from eight to ten quarts of clover seeds, and a bushel of orchard grass seeds per acre in February, upon wheat or rye land. I should prefer their being sown with oats or barley, as the seeds could be covered more regularly with the harrow, and their vegetation would be secured. I do not apprehend injury from frost in early sowing, but I dread the effects of drought from late. I have never suffered from early, but have generally had cause to regret the evils of late sowing.

I consider orchard grass the best herbage for pasturage upon *upland*—for hay it certainly cannot be excelled.

I cultivated timothy for many years. As pasturage it is utterly worthless after the first of July, upon upland. Timothy hay is valuable for turf horses, and those used in quick draught—but for the purposes of farmers, I think it should not be raised. I have long since discontinued its growth. It is a great exhauster, and should never be cultivated, unless it can be carted to market, and be replaced by large supplies of manure.

I am, very obediently, &c.

Yours,

LOYD JONES.

JOHN HARE POWEL, ESQ.,

Powelton.

On Grasses—Orchard or Cocksfoot—Timothy and Red-Top, or Herds-grass—their comparative values for Pasturage and Hay.

By John Hare Powel, Esq.

Powelton, February 10, 1827.

In presenting Mr. Jones' communication, it is not necessary that I should advert to his accuracy and reputation as a farmer, with which you are sufficiently acquainted, to receive his opinions and statements, with implicit reliance upon their validity and force. He is the most successful cultivator of orchard grass, with whose practice I have become acquainted in any part of the United States.

As he has detailed his mode of securing the seeds, I may be allowed to state, that I have for several years induced him to send large quantities of them to my agricultural friends, whose experience, in confirmation of my impressions, that when *properly* treated they seldom fail, establishes the correctness of his management in collecting them.

I have before brought to your notice the extraordinary product of cocksfoot or orchard grass as pasturage upon *strong* soils—its early appearance in the Spring—its vigorous and rapid growth throughout the Summer and Autumn, affording even in December, the most succulent and nutritive herbage I have in this climate seen.

Of timothy as pasturage, I have had during twenty years, opinions similar to those conveyed by Mr. Jones.

On highly manured, or deep alluvial soils, it produces greater crops of hay, than any

grass I have grown, except red clover. Mr. Welles, of Boston, a few years since obtained four tons of timothy hay per acre, from a large field. His well known precision, independent of the ample proofs he adduced, sufficiently establishes the fact. When allowed to become *mature*, I think it causes as much exhaustion as a crop of Spring barley or oats. And so far from land becoming better, whilst exposed to the effects of the scythe, and the rays of the sun in a regular course, wherein timothy is introduced as the meliorating crop, I am led to believe that it is made worse. If timothy be depastured after the first crop has been taken, I apprehend that, as its after growth is extremely feeble, in this climate, the sun must have great effect upon the soil, throughout the hottest season of the year.

Red-top or herds-grass has recently been brought more into notice, and it will, I have no doubt, be extensively cultivated, when it shall have been better known. We see it generally upon the ill reclaimed marsh lands of an adjacent state, where perhaps its extraordinary hardiness and large product, even under the most slovenly management, may have retarded to a certain extent, the improvement of the district in which it is principally grown. It will flourish where no other grass, which *we* cultivate, can live. Its apparent qualities, and the quantity of nutritive matter, are no doubt very much influenced by the state of the land upon which it is produced; hence when offered in the market in competition with the produce of the *most highly cultivated upland*—it is condemned. The seeds of this grass, as those of cocksfoot, are rarely brought to the shops in a sound

state—they, as the former, are surrounded by chaff, which, if closely examined, will be found frequently to envelope shrivelled kernels, and to be infested with some of the most noxious weeds with which a farmer can contend.

Upon a small piece of land which had been occupied by Swedish turnips, and had been carefully tilled for many seasons in succession, two bushels of herds-grass seeds per acre, in addition to the usual quantity of clover and timothy seeds, were sown with Persian barley in the Spring of 1820. A much larger piece was sown at the same time, with timothy alone. The timothy soon disappeared from both—the clover of course long since *went out*—the herds-grass has formed a tough and valuable sward.

Upon arable farms it is sometimes troublesome, as it is tenacious of life as blue grass. Its product is not generally heavy upon such lands, and I should not therefore cultivate it with a regular course of white crops, although upon a grazing farm, or upon some large southern domains, where it would be well that the landholders should forget half their possessions, it might be expedient to cultivate it largely, and obviate the necessity of indulging the fatting bullocks with a regular ramble for the solace of their stomachs, throughout some hundred acres of growing Indian corn. The herds-grass has the great merit of being able to take care of itself.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

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SINCLAIR'S

HORTUS GRAMINEUS WOBURNENSIS.

EXTRACTS.

On Grasses—Orchard—Rye—Clover—Sainfoin, &c.—their products, comparative values, constituent parts, modes of sowing, managing—quantity, quality of Seeds, and adaptation to particular Soils.

In some plants there is a comparative excess of saline matter, and when such plants are given unmixed with any other to cattle, they are most subject to disease, or continue for a length of time before they improve, however abundant the supply. The following facts, which came within my own immediate observation, may serve as an instance to point out the importance of a mixture of such grasses as possess some difference in the qualities of their nutritive matter; and at the same time they will show, that the bitter extractive is efficacious in correcting the over-succulency, or laxative nature of green food, without the aid of *dry* vegetable fibre.

Two fields were sown down for pasture; one with white clover and trefoil only, and the other with a variety of the natural grasses, for experiment, with a portion of white clover. The two fields were depastured with sheep. In the enclosure of white clover a considerable quantity of cocksfoot grass grew on the edge of the fence; it was of a very harsh quality, from its unfavourable situation, and consisted almost entirely of culms. In a few days the sheep went to this grass, and ate it down entirely, though there was a profusion of the white clover. In the course of time many of the sheep became affected with the disease termed *red-water*, of which several died. But in the adjoining field, which contained the natural grasses, *cocksfoot* grass, rough-stalked meadow grass, rye-grass, foxtail-grass, and white clover, the sheep were not affected with that, nor any other disease, and they left untouched the stems of the cocksfoot, which were here of a more tender succulent nature, than those on the edges of the other field, which were so greedily devoured by the clover sheep.

It may remain only to observe, that if the hard stalks of the cock's-foot in the clover field had been in sufficient quantity, they would most probably have prevented the disease from attacking the sheep; but this could not have been by virtue of the *dry fibre* only of the culms, because in the adjoining field, where every thing was contrary to disease, the sheep rejected the culms altogether. The dry, or mechanical action of the culms, was here wanting; yet the animals continued healthy, and fattened, because the bitter extractive was in greater proportion in the leaves or herbage than in the culms which they rejected; and also proved beneficial, though combined with succulent food, which could have nothing of the action of the dry hay or straw before mentioned. * * * * * * * * * * *

The proportional value which the grass at the time of flowering bears to that at the time the seed is ripe, is as 11 to 10; and to the grass of the latter-math, as 5 to 2.

There has often been occasion to observe, that though grass, when left till the seed be ripe, may afford a greater quantity of nutritive matter, nevertheless the value of the latter-math which is lost by this means is often greater than the extra quantity of nutritive matter thus obtained; add to this the impoverishing effects of the plants on the soil by the process of ripening the seed, and the less palatable nature of the hay. The plants of grass are likewise much weakened by the production of seed, for in all the experiments I have made the produce of latter-math proved always less, in many instances one-half less, in a given time after the seed crop, than after the crop taken at the time of flowering; I never could perceive, however, that the bad effects

extended in any degree to the next following season, the weight of produce being then as frequently superior as equal or less.

Rye-grass appears to have been cultivated previous to the year 1677; besides which, red clover, sainfoin, spurrey, trefoil, and nonsuch, were the only plants then cultivated as grasses, or termed such. And it is only of late years that any other species of the natural grasses has been tried as a substitute for it in forming artificial pastures—as cat's-tail grass (*Phleum pratense*); cocksfoot grass (*Dactylis glomerata*); and fox-tail grass (*Alopecurus pratensis*). The cat's-tail grass appears to have been made trial of before either of the other two, not more than fifty years ago, by Mr. Rocque, a farmer at Walham-green, near London. The seed of the cocksfoot grass was introduced about the same time from Virginia, by the Society of Arts, &c., but no trial was made of it till several years afterwards: it was then called orchard-grass; and it is but lately that the fox-tail grass has been tried on an extensive scale—the merits of which seem to have been first accurately pointed out by the late excellent Mr. Curtis in his several works on grasses.

There has been much difference of opinion respecting the merits and comparative value of rye-grass. It produces an abundance of seed, which is easily collected and readily vegetates on most kinds of soil under circumstances of different management; it soon arrives at perfection, and produces in its first years of growth a good supply of early herbage, which is much liked by cattle. These merits have, no doubt, upheld it till the present day in practice, and will probably, for some time to come, continue it a favourite grass with many farmers. But the latter-math of rye-grass is very inconsiderable, and the plant impoverishes the soil in a high degree if the culms, which are invariably left untouched by cattle, are not cut before the seed advances towards perfection. When this is neglected, the field after midsummer exhibits only a brown surface of withered straws.

Let the produce and nutritive powers of rye-grass be compared with those of the cocksfoot grass, and it will be found inferior in the proportion nearly of 5 to 18; and also inferior to the meadow fox-tail in the proportion of 5 to 12; and inferior to the meadow fescue in the proportion of 5 to 17. In these comparisons, from which the above proportions arose, it was necessary to omit the seed crops for the truth of comparison. * * * *

Cocksfoot grass perfects an abundance of seed, and the plants arrive at a productive state as soon as those of rye-grass; hence its superiority over rye-grass, as above, is equally great for permanent pasture and the alternate husbandry; which is not so precisely the case with the fox-tail grass and meadow fescue. One peck of rye-grass, with 14 lbs. of clover, per acre, is generally considered sufficient for sowing artificial pastures. * * * *

The proportions in which the seeds of the different species should be mixed for permanent pasture:—

Cocksfoot grass (*Dactylis glomerata*)	2 bushels.
Meadow-fescue (*Festuca pratensis*)	2
Meadow fox-tail grass (*Alopecurus pratensis*)	2
Rough-stalked meadow-grass (*Poa trivialis*)	2
Tall oat-like soft-grass *Holcus avenaceus*)	0½
Meadow cat's-tail (*Phleum pratense*)	15 lbs.
Hard, or smooth fescue (*Festuca duriuscula*, vel *glabra*	2 bushels.
Crested dog's-tail (*Cynosurus cristatus*)	1
Nerved meadow-grass (*Poa nervata*)	0½
Wood meadow-grass (*Poa nemoralis*)	1
Narrow-leaved meadow-grass (*Poa angustifolia*)	0½
Broad-leaved creeping bent, or fiorin (*Agrostis stolonifera*, var. *latifolia*)	0½
Rye-grass (*Lolium perenne*)	1
White or Dutch clover (*Trifolium repens*)	15 lbs.
Bush vetch (*Vicia sepium*)	0½ bushel.
Sweet-scented vernal grass (*Anthoxanthum odoratum*)	0¼
Perennial red clover (*Trifolium pratense perenne*)	12 lbs.
Achillea millefolium, yarrow	4

The proper quantity of grass seeds to sow, per acre, is a point of the greatest importance, as regards the expense of the seed, and the speedy formation of the most valuable sward. * * * * * * * * *

When land is to be sown for permanent pasture, no admixture of any annual or grain crop, or broad-leaved clover, should be admitted with the grass seeds. Experience proves that they are highly injurious to the intention of speedily forming a solid productive sward; and that the profit that may accrue from a grain crop thus obtained, will be much overbalanced by the loss of grass in the two following seasons. Every plant of these annual crops occupies a place, to the detriment of the expected sward; besides rendering the surface porous by the decay of their roots in the end of autumn, much mischief, likewise, is done to the sward by portions of the crops being beat down with heavy rains. The above mixture should be sown in the autumn or spring, at the rate of four bushels and a half to the acre; much less will form a good pasture, but when the seeds can be had from the farm at a moderate expense, the maximum quantity should be adopted. If sown in spring, it will be found highly useful, in the following autumn, to give the surface a slight top-dressing with rotten dung or compost, in which the seeds or roots of weeds are not suspected, and to sow immediately after half a bushel, more or less, of the mixture of seeds, according as the sward appears to be deficient of plants; after which, (the top-dressing being previously well reduced by a slight bush-harrow,) the roller should be liberally used; and *rolling*, for the first two years, should never be neglected at any favourable opportunity. If the seeds are sown in autumn, the top-dressing, re-sowing, and rolling, will be found equally requisite and beneficial in the following month of May; and even if repeated in the following autumn, they will greatly forward the intention. This is imitating the process of nature in forming pastures—with this advantage, that for one seed of a valuable species of grass supplied to the soil by the slow and gradual process of nature, in one season, a thousand are supplied in the same space of time; and thus take possession of their natural soil, without the danger and inconvenience of expelling its usurpers.

There has been some difference of opinion respecting the manner of reaping the produce of seedling grasses; whether by depasturing with sheep, or by mowing after the plants have perfected their seed. The manure supplied by sheep to the young grasses is of great advantage; but the animals are apt to bite too close to the root, and sometimes tear up the young plants altogether. I have found, on repeated trials, that cropping seedling grasses before they had produced flowers, had the effect of retarding and weakening the after-growth of the plants for that season very much. But after the period of flowering, cropping was found to strengthen, and rather encourage the growth of plants. In the same way I found, that old plants of grass, when cut very close after the first shoots of the spring made their appearance, afforded about one-third less weight of produce in the whole season than those plants of the same species which were left uncut till the flowering culms began to appear. As the advantages of the manure of the sheep may be supplied by top-dressing, and the disadvantages resulting to the tender seedling plants from early and close cropping cannot so speedily be removed, the practice of suffering the grasses to produce flowers before they are cut, with the application of top-dressings, and the use of the roller, till the spring of the second year, appears to be far more profitable than the former practice of depasturing the seedling grasses at an earlier period than the spring of the second year. But in this, no doubt, as well as in other particular modes of management recommended for general practice in the culture of plants, local circumstances may interfere so much as often to render some modification of them necessary.

The superior value of sainfoin for soils on a porous or dry sub-soil is therefore manifest. * * * * * * * * * *

Sainfoin grows wild in all the chalky districts in England; but it was first introduced to English farmers as a plant for cultivation from Flanders and France, where it has been long cultivated. Parkinson, in the year 1640, says, that it is "generally known to be a singular food for cattle, causing them to give store of milk."—Worlidge, in his Mystery of Husbandry, &c. (1681), treats of sainfoin at large: "In Wiltshire, in several places," says he, "there

are precedents of sainfoin that has been there twenty years growing on poor land, and has so far improved the same, that from a noble per acre, twenty acres together have been certainly worth thirty shillings per acre, and yet continues in good proof."—These extracts show the high opinion which was entertained of this plant above one hundred years ago; but this was, no doubt, in a great measure owing to the small number of plants then known for sowing in the farm.

The experiments that have here been made on this plant were confined to a clayey loam and a light siliceous soil. Upon these it was evidently inferior to the broad-leaved and perennial red clover; but on chalky and gravelly soils there have been abundant proofs of the superior value of sainfoin. After the ample details of the uses and cultivation of sainfoin, given in Mr. Young's Annals, it will be difficult to add any thing new. It is a perennial plant, and produces but little herbage the first year, and on that account should not be sown on land that is intended to remain only two years under grass. In Mr. Young's Annals we are informed, that sainfoin is allowed on all hands to be an admirable improvement on limestone rocks and chalk downs, which, in order to be cultivated to the greatest advantage, should be in this course, with no more arable than is necessary for the change Thus, if sainfoin last sixteen years, as it certainly will if properly managed, then sixteen parts of the down should be sainfoin, and as many more parts as there are years necessary for tillage, before the ground should be sowed with it again: suppose this period to be five years, the portions would then be 16 sainfoin; 1 sainfoin pared and burnt, and under turnips; 1 barley or oats; 1 clover; 1 wheat; 1 turnips; 1 barley or oats, and with this crop sainfoin sown again=22. In another part we are informed that sainfoin is also a great improvement in thin, loose, dry, sandy loams, upon marl or chalk bottoms.

Thin soils that wear out, or tire of clover, are laid down to great advantage with it, will last twenty years, and pay the farmer as well as his best corn crops. If a flock of sheep be an object of primary importance, this plant will afford them plenty of dry food for winter, in hard weather. An acre of indifferent land will yield two tons of sainfoin dry, and therefore twenty acres will serve 1000 sheep for a month, supposing a sheep eats three pounds of hay in a day, which is a large allowance. * * * * *

It flowers about the middle and towards the end of June. The seeds are large, and when sown in wet soils generally burst and rot without vegetating. There is some difference of opinion with respect to the best season for sowing; according to several trials that I have made, the middle or end of April is the most certain; but when sown in the autumn, unless the soil be favourable, many of the plants are lost during the winter: should circumstances prove otherwise, the autumn sowing will be found the most advantageous, as it affords nearly a full crop in the ensuing season. * * * * *

The grasses, and other plants, best fitted for alternation, as green crops with grain, are such as arrive at perfection in the shortest space of time, or within the compass of two years; such as have their leaves broad and succulent, and that do not quickly run to seed. Plants of this description are supposed to produce the greatest weight of herbage at the least expense to the soil.

It is a curious and well-known fact, that any species of plant that has continued till its natural decay on a particular soil, cannot be again immediately reared with equal success on the same spot, till some other crop intervene; but that a *different* species of vegetable will there succeed better, for its peculiar period of life, than it would on a soil naturally better adapted to its growth, where it had just attained to perfect maturity. This holds good with respect to annual plants as well as to those that continue to live many years. But it is better seen in the former, as their habits and duration in the soil are oftener and more directly within the reach of common observation.

On this antipathy of plants seems to depend the theory of alternate cropping with green crops and grain—varying in some measure according to the circumstances of soil and climate; but the principle appears to remain the same.

On analysing a soil immediately before and after producing an impoverish-

ing crop, the results of such analysis do not point out any diminution in the weight or proportions of its constituents sufficient to account for the weight of vegetable matter produced. The decomposing animal and vegetable matters of the soil are the only constituents wherein a sensible loss is perceived.

M. Braconnot grew plants in substances free from any kind of soil, as in flowers of sulphur, and in metal. He supplied the plants with distilled water only. They arrived, by these means, to a perfect state of maturity. The produce was submitted to careful analysis; and the results showed that the different vegetables so produced, contained all the constituents of the different species, precisely the same as when the plants were cultivated on their natural soils. * * * * * * * * * * * *

	Green Food.	*Nutritive Matter.*
	lbs.	*lbs.*
Mangel wurtzel, or white beet, (*Beta cicla,*) produces upon a suitable soil, or a deep rich loam, on an average, twenty-five tons* of green food per acre, every pound weight of which contains 390 grains of nutritive matter; and therefore per acre - - - - - - - -	56000	3120
Carrots (*Daucus carota*), produce upon a deep light loam, on an average, eleven tons, every pound of which contains 750 grains of nutritive matter - - - -	24640	2640
Potatoes (*Solanum tuberosum*), produce upon a fresh loam, of intermediate quality as to moisture and dryness, on an average, 15 tons per acre, affording of nutritive matter per pound, 1000 grains - - - - - -	33600	4800
The common field or white turnip (*Brassica rapa*, var.) affords from a sandy loam, upon an average, per acre, 16 tons of green food, a pound of which contains 320 grains of nutritive matter - - - - - - -	35840	1638
The Swedish turnip, or ruta baga (*Brassica, rapa,* var.), produces on a favourable soil, or a strong loam, on an average, 13 tons per acre, a pound weight of which affords of nutritive matter 440 grains - - - - -	29120	1830
Cabbages (*Brassica oleracea*, var.), which delight in a rich strong loam, afford of green food, on an average per acre, 25 tons, every pound of which contains 430 grains of nutritive matter - - - - - - - -	56000	3440
Kohl rabi (*Brassica oleracea*, var.), the produce from a soil similar to that for cabbages or Swedish turnips, is on an average 14 tons per acre, and affords of nutritive matter per pound 420 grains - - - - -	31360	1881

If a plant, therefore, impoverishes the soil in proportion to the weight of vegetable substance it produces on a given space of ground, the following will be the order in which the plants just mentioned exhaust the land.

Mangel wurtzel - - -	25	The proportions which they bear to each other with respect to weight of produce.
Cabbages - - -	25	
White Turnip - - -	16	
Potatoes - - -	15	
Kohl rabi - - -	14	
Swedish Turnip - -	13	
Carrots - - - -	11	

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* I have found this variety less nutritious and less hardy than the pink or light red mangel wurtzel. Seventy-eight thousand four hundred and forty-eight pounds of the pink kind were produced, in 1823, upon one acre and fourteen perches of farm land in Philadelphia County.—*Am. Ed.*

On Mangel Wurtzel—Its cultivation, product, and value on Dairy and Breeding Farms—Causes of failure—Quality of Butter—Application of Cultivators—Advantages of a flat surface in this climate—Superiority of Indian Corn for the general purposes of American Farms.

By John Hare Powel, Esq.

Powelton, Philadelphia County.

I enclose certificates, showing that sixteen hundred and thirty-four bushels of mangel wurtzel, weighing seventy-eight thousand four hundred and forty-eight pounds, were produced at Powelton, upon one acre and fourteen perches of farm land, accurately measured by a regular surveyor.

I selected a parallelogram, containing thirteen contiguous rows, which were drawn and measured in my presence, to ascertain the largest quantity, which had grown upon the richest part of the field. One hundred and forty-three baskets, equal to one hundred and seventy-four bushels, were produced upon thirteen and an half perches, at the rate of two thousand and sixty-five bushels per acre, weighing 44 tons, 5 cwt. 27 lbs.

I am satisfied that the account of my farmer is correct, and as the roots had been drawn ten days, had been closely cut beneath the crowns, were dry, and entirely free from dirt, both the measurement by the basket, and the estimate by weight, must be fair. If a barrel had been used, or any other large vessel, of *similar shape*, the crop would appear greater, as the measure would not have been so often filled, and consequently not so often heaped.

Mr. Milnor, the Recording Secretary, was good enough to superintend the measurement of the basket, and saw the manner in which it was filled.

I submit to you the shingles containing the original scores, and refer you to him for corroboration of the facts. It may be well to state, that however great this crop may appear, in England a larger product has been obtained.

My soil was not naturally strong; it has been gradually so much deepened, as to enable Wood's plough, No. 2, drawn by four oxen, to plough fourteen inches deep. Fresh barn-yard manure was equally spread upon the surface, and ploughed under in the early part of April, in quantities not larger than are generally used for potato crops in this county. Early in May the land was twice stirred with Beatson's scarifier—harrowed—rolled—after stirred—harrowed, and rolled again in the opposite direction. The holes for the

seeds were made by a wheel containing pegs in its circumference, which penetrated the ground about an inch, leaving intervals of four inches; the rows were made two feet asunder; two capsules were dropped into each hole; the wheel of a common barrow was passed over them, thus compressing the earth, and leaving a slight rut, for the retention of moisture.

A small cultivator, which I had contrived for the purpose, was drawn between the rows soon after the weeds appeared; a three-inch triangular hoe removed the alternate plants, leaving the others at distances, varying from 8 to 12 inches asunder. The cultivator was twice used before the 20th of July. The heavy rains of August made another hoeing necessary, and surcharged the ground so much with moisture, that all roots increased much less in that month, than during the same time, in the two last years.

In order to convey an idea of a mangel wurtzel crop, to some of the members who are not acquainted with its usual product, it may not be improper to state, that three-fourths of the root extend above the ground—that I last year obtained one, which at Mr. Landreth's shop weighed, some days after it was drawn, 17 lbs. 10 oz.

I this year desired smaller roots, which might grow so closely, as by their leaves to protect the soil as much as possible from the exhalations of the sun. My cultivator, by its peculiar form, enabled me to cut off the weeds when the plants were so young, that if I had applied the plough, their crowns must have been covered in many instances by earth, occasionally falling from its land side. The failure which attends the cultivation of most root crops in drills, proceeds from the neglect of weeds in their early stages. Four or five days of delay, frequently make the difference of fifteen days in the labour of making clean an acre of ground. The same weeds which a boy with a sharp shingle could remove at the commencement of one week, may, before the end of the next, require the application of an implement drawn by an horse.

I ascribe my success, in great measure, to the use of *Wood's extraordinary plough*, which enters the soil more deeply, and pulverizes it more perfectly than any other I have ever seen with equal force in any country—to the use of cultivators, which complete the production of fine tilth—to the destruction of the weeds on their first appearance—to leaving the smallest space upon which a horse can walk between the rows, and above all to *planting the seeds of a proper kind upon a surface which is kept perfectly flat.*

In proof of the advantages of this invaluable root, I exhibit

cream obtained from one of my cows, which has been fed for several weeks, exclusively upon mangel wurtzel and millet fodder. You will find that its colour and flavour are perfectly good; the butter which it affords, is more like that produced in June, than any I have used, excepting such as had been derived from cows fed on carrots and corn meal.

Notwithstanding the large product, I am confirmed in the opinions, which I have repeatedly expressed, that in this country, nothing can supplant the king of vegetables, Indian Corn. I would recommend mangel wurtzel, in preference to all other roots, for dairy and breeding farms: and to a limited extent, where labour and manure are not too dear, in comparison with the value of land, it should be cultivated upon all farms.

The expense of preparation for a mangel wurtzel crop is not so great as might be supposed.

The labour of four oxen, a ploughman and driver in ploughing one acre, fourteen inches deep, costs	$3.00
Three stirrings with Beatson's *improved* scarifier, which two oxen managed by one man, can readily pass over five acres in good condition, in one day,	1.25
Two harrowings and two rollings, ...	1.25
Dibbling with a wheel, ...	1.00
Dropping seeds, (if performed by men,) . . .	5.00
Pressing them under by a wheel, ...	1.00
Hoeing and thinning, ...	15.00
Cleaning with Blockley cultivator, drawn by one horse,	3.00
	$30.50

I am, very obediently, yours,
JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

Philadelphia County.

At a meeting of the Pennsylvania Agricultural Society, held in November, Mr. Powel exhibited a bottle of cream, produced by a cow, which he stated, had been fed solely on mangel wurtzel roots, and millet hay. It was pronounced by all who examined it, to be equal, in richness and flavour, to any they had ever seen.

His Durham Short-horn heifers, fed upon these roots, yield very large quantities of milk, affording the *richest* cream I have tasted.

JOHN P. MILNOR,
Recording Sec'y. Penn. Ag. Soc.

We have counted the scores, examined William Powell the farmer, and are satisfied, that the piece of land at Powelton, measured by Mr. Henry Serrill, produced thirteen hundred and forty-one baskets of mangel wurtzel, and that the part thereof containing thirteen and an half perches, produced one hundred and forty-three baskets, all the roots having been closely cut below the crowns.

JOHN P. MILNOR,
HENRY SERRILL.

Mangel Wurtzel—Product—Certificates—Oaths.

November 19.

I have carefully measured the basket used by William Powell, and referred to in the foregoing certificate, and find, that it contains precisely one bushel and seven quarts. A basket of this size, wide at top, and of sufficient height, was selected, in order that the beets might be fairly measured, by being placed singly, nearly *perpendicularly*, their necks extending above the sides, upon which others were afterwards laid horizontally until the usual heaped measure was given; thus leaving as few interstices as possible.

JOHN P. MILNOR.

Having measured the above piece of ground, I certify it contains one acre and fourteen square perches. A part of which, containing thirteen and an half square perches, had been staked out in order to ascertain the exact quantity of mangel wurtzel thereon.

HENRY SERRILL,
Surveyor.

I have measured the mangel wurtzel, taken from farm land at Powelton, surveyed by Mr. Serrill, and am convinced from the careful manner in which I scored upon shingles with a knife every basket as it passed, from my hand, and as I was checked in my account by the person who assisted me, it is not possible any mistake could arise. Upon one acre and fourteen square perches, thirteen hundred and forty-one baskets were produced. From the piece which had been staked out, in order to ascertain the exact quantity of mangel wurtzel thereon, I took one hundred and forty-three baskets. The strip included thirteen adjoining rows, which were measured from the edge towards the centre of the field without any break.

WILLIAM POWELL,
Farmer at Powelton.

Philadelphia County, ss.

Personally appeared before me, the subscriber, one of the justices of the peace, in and for the county aforesaid, the above named William Powell, who being sworn, according to law, saith, that the foregoing statement is true, to the best of his knowledge and belief.

Sworn and subscribed, this twenty-eighth day of November, A. D. 1823.

GEORGE HOWARTH,
Justice of the Peace.

West Philadelphia.

A farm basket, properly filled with mangel wurtzel, was brought to my store, by Mr. Powel's farmer. The roots alone, weighed rather more than fifty-eight and an half pounds.

DAVID HOOPES.

The Committee appointed to examine the papers relative to a crop of mangel wurtzel raised last season by John Hare Powel, Esq., after inspecting the certificates, are unanimously of opinion, that Mr. Powel at Powelton raised on one acre and fourteen perches of ground, thirteen hundred and forty-one baskets, equal to sixteen hundred and thirty-one bushels of mangel wurtzel, weighing seventy-eight thousand four hundred and forty-eight pounds; and that he is justly entitled to a premium therefor from the Pennsylvania Agricultural Society.

GEORGE M. HOLSTEIN,
ELIJAH LEWIS,
MANUEL EYRE.

April 24th, 1824.

Premium relinquished.

Extract from the minutes of the Pennsylvania Agricultural Society.

JOHN P. MILNOR,
Recording Secretary.



On Deep Ploughing—Oyster-shell Lime—the management and application of Vegetable and Animal Manures.

By John Hare Powel, Esq.

Powelton.

I have reclaimed, by oyster-shell lime and deep ploughing, a farm, made sterile by a series of the most exhausting crops, which the cupidity or folly of bad tenants could suggest. I am not ignorant of the objections which have been often brought, and not less ingeniously supported, against breaking the "pan," and reversing the sub-soil; but I have seen few instances, where *ultimate* success has not attended deep ploughing, in *a judicious course* of management, except on arid sands. I have turned up sub-soils, of different hues, mixed with substances, varying, from tenacious clay, to loose gravel, or sparkling sand, and have found, that those who condemned my "burying fertile mould beneath sterile clay," confess, that at the end of five years, I obtain great crops, by means of deep and fine tilth, from a chesnut ridge, and gravel bottom, originally covered with *barren oak* and cedar trees. Some of my friends, who are in the habit of hauling manure to the distance of twelve miles, may imagine, that my proximity to the town, affords a remedy for all the defects of soil. Within twelve years, I have expended but six hundred dollars in the purchase of manure, although during part of the time, large quantities of hay were sold from my farm. Where the mould was five inches deep, I ploughed ten in the autumn—applied caustic oyster-shell lime, in quantities, equal to eighty or an hundred bushels per acre. In the spring, I ploughed six, reversed the sub-soil, and took a white crop. In the next autumn, I ploughed nearly eight for a winter crop—in the succeeding year, the original depth of ten inches was reached by the plough. In some instances, for root crops, it has been gradually increased. This day with Wood's Plough, No. 2, drawn by four oxen, my land has been ploughed for mangel wurtzel more than fourteen inches deep. The "caput mortuum" or sub-soil, after having in the first instance been corrected by the causticity of lime, and the expansion of frost—improved by the atmosphere, and the calcareous matter which remained, was turned below the depth of an ordinary furrow. The first crop

was certainly better than that which had preceded it, as the advantages derived from the lime, the larger supply of moisture, secured by the greater capacity of the loose soil for its deposite, and the increased depth of tilth, more than compensated for the injury, that might be apprehended, from the admixture of small portions of "sour soil." The next crop was nearly as good—the succeeding crops have gradually increased in quantity, weight, and value. The ingenious inventor of the sub-stratum plough, has added much to our means of improvement, in this, as he has done by the application of his skill to the production of various implements, valuable by their simplicity and cheapness—but whilst I acknowledge the benefit he has conferred, by placing a substitute for deep ploughing within the reach of those, who cannot be tempted to reverse the sub-soil, I cannot avoid thinking, that if the sub-soil in all cases be deleterious to vegetation when brought to the surface—when meliorated by the chemical action of lime—by the expansion of frost—by exposure to the influences of heat and light—by the operation of various agents and manures, employed for the mechanical separation of its particles, or the supply of its deficiencies, it must in most cases, be injurious to the tender radicals, which have been led to a "caput mortuum;" whither they never could have been seduced, but by the attractions of water, to vegetate, for a time—soon after to die, and disease or debilitate the plant.

I have never had apprehension of the loss of animal manure by sinking, as its component parts are generally so insoluble in water, as to cause them to be left by filtration sufficiently near to the surface for all our purposes: but I have had many motives to guard against its escape by evaporation, and therefore invariably deposite it deeply, and generally in its freshest state, beneath the surface of the land. My experience during nearly twenty years has taught me that in *this climate, where the exhalations of the sun* during one season, the influence of wind—the effects of melting snow, and torrents of rain, during another, upon a surface made impervious by frost almost to the edge of an axe, top dressing, except when principally composed of calcareous matter, should seldom be applied. Old pastures remarkable for the excellence of their herbage, or grass lands within the reach of large towns, may be profitably enriched by the application of animal manure to the surface in the spring, when the soil is open, and the grass by pushing forth its leaves, soon affords some protection, from the sun, whilst they imbibe to a certain extent, the fertilizing principle, passing off in a gaseous form.

The expedients which the *dearness* of *land*, and the *cheap-*

ness of labour, have coerced certain Europeans to adopt, cannot for ages become profitable, where the farmer tills generally his own soil; and the labourer is paid, and protected, as being worthy of regard, and the wages of his toil. Compost heaps, in certain situations, may be advantageously formed. In very few would they repay the cost of chopping, turning, and scientific commixing, without noticing the loss, in this climate, at each operation, of animal matter, by the escape of its volatile parts—not the least essential of which it is formed. I am satisfied, that all animal manures should, if practicable, be applied in their freshest state—that where this cannot be done, they should be covered with earth, and exposed in the fold yard, to the treading of beasts, in order, that the mass may be made compact—the air be excluded—and consequently, decomposition retarded, until its influence shall be directly applied, to stimulate plants, and enrich the soil.

The curious sheds, ingenious stercoraries, and mellow compost "pies," of which prints are given, and on which long essays have been written, I have been convinced, are adapted neither to the climate of Pennsylvania nor to our purses nor plans.

I should be unwilling to shake off some of the prejudices, which we have imbibed, with our mother tongue: but although I do not object to cut a heavy cloth coat, in an August day, after a foreign winter fashion, I am not prepared to remain a colonist in thinking, that we cannot manage our farms, without European precedent or rule.

If any man were to cultivate a large farm in this state, after the most approved scientific mode, which the agricultural Doctors would have us adopt, he might expect to have an empty barn, and ere long a light pocket.

Science is essential to the agricultural art—chemistry aids it at every turn,—cooking is a chemical process; yet I should be unwilling to be fed, with soup from the laboratory of the great Davy himself, unless he had been *practised* in seasoning his broth—even if with the aid of the whole college of physicians, it were scientifically compounded, as Smollett's feast of the ancients, and served in classic vases of gold.

I am, very obediently, yours, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

On making Hay—Hay Houses—Pennsylvania Barns—Arrangements of the Fold Yard.

By John Hare Powel, Esq.

Powelton, July 1, 1824.

Sir,—Your profitable management, much more than the high state of cultivation, in which the officers of the society found your farm, leads me to desire a statement of the system you pursue, in the preparation of your soil—the arrangement of your fields—the rotation of your crops—the mode of securing fodder—feeding cattle—and the application of their manure. I was struck by the appearance of your stock, and gratified at finding that our opinions and practice coincide, in the preparation of hay, and distribution of it in hay houses, instead of huge *mows*.

I have thought the parade of Pennsylvania barns not more profitable than the decoration of our fine blue waggons, or the musical bells attached to our teams. The ingenious mode adopted to deprive grasses of their most valuable and nutritious parts, is so absurd, that it long since would have been abandoned, I should hope, had not our prejudices in favour of old usages, which generally keep practical farmers right, in this instance put us all wrong.

In good weather, most crops of grasses can in this state be secured without being *shaken* from the swarth. My uniform practice for many years has been to allow grass to remain nearly two days untouched, to gather it by an horse rake, cock it in *the hot part* of the day, salt it, and place it in an hay house, which admits a free circulation of air. My clover, like yours, retains much of the colour of its blossoms and leaves. The advantage of pitching hay from the carriage, into "a bank barn," does not counterbalance the expense of labour in preparing, the loss of nutrition in drying, and the great danger of fire from heating, as well as from the escape of moisture, which so often in *this* climate attracts lightning, to the utter destruction of the building, and all the hopes of the farm.

The convenience of feeding, has also been brought to aid the arguments, in favour of a great Pennsylvania barn. We owe much of our success to the industry, care, and skill, of our excellent German population, but I think it may be questioned, whether the expense they incur, in the arrangement of their farm buildings, is not very often mischievous, not merely useless, in making tender their cattle, and diseasing

them by bad hay. It is scarcely possible in this state, where the changes of climate are sudden and severe, to guard farm stock from suffering, when they are made warm throughout the night, and are necessarily exposed to pelting storms during part of the day. I am convinced, that milch cows, and very young calves, require protection from cold—all other cattle, if guarded from wet, and currents of wind, feed with more appetite, digest with more ease, work with more vigour, and encounter accidental exposure, with less danger of harm, than if they be confined within thick stone walls, inhaling an impure atmosphere, from which by the instinct of nature, if not thwarted by the ill-judged contrivance of man, they would fly.

I would suggest, that the position for the farm yard be selected, as usual, at the foot of a small hill, of which the southern side, should be cut in such manner, as to admit the erection of a barn sufficiently large for all its usual purposes, except that of holding hay, and feeding cattle. Roofs pitching to the south, and sufficiently capacious to protect all the hay, straw, fodder, and stock of the farm, should be extended at both gable ends. For the support of the fodder lofts, and roofs, pillars of brick, or stone, should be erected at proper intervals; for the security of the bank, and the road at its edge, a wall somewhat higher than it, should be built—a space of two feet should be left, between the northern side of the loft and the wall. Racks should be placed perpendicularly, with their outer edges exactly corresponding, and parallel with the wall, and side of the loft. Thus a space of two feet would remain between them and the wall, to be filled with hay. A long shutter, sufficiently wide, may be secured by hinges, attached to posts, on the outer side of the wall, in order that when the rack shall have been filled, by pitching from above, it may be closed at a proper angle, to exclude rain or cold air.

Stalls for cattle, pens for sheep and calves, should be at fit distances placed beneath the hay—palings, and gates, might secure them on the southern, or outer side. The hay being exposed on two of its sides, would require infinitely less drying, than if pressed closely, in a great mass, within the thick walls of a barn. It is scarcely to be believed, by those who have not seen the experiment, how little drying grass requires, when it is to be salted, and thrown lightly into an open hay house. By beginning at one end of a long loft, and discharging the loads, so as to not more than half fill it, until the hay be extended to the other, by the time that the end at which the farmer began, shall be quite filled, his hay, in de-

spite of the state in which it had been hauled, will be sufficiently dry.

The advantages I propose, are the saving of labour in making the hay, of money in building the barn, of nutrition from not exhausting the grass by unnecessary exposure, to the rays of the sun; and to *practical* farmers, what to them is of consequence, a return in profit, on cattle, which after being fed from January to July upon hay, and grass alone, may be exposed on Philadelphia shambles with credit to the feeder, as yours have been shown.

I am yours, &c.

JOHN HARE POWEL.

To John G. Watmough, Esq.

On Root Crops—Growing—Securing—Their application and value.

BY JAMES WILLIAMS, ESQ.

Philadelphia County.

My present observations will be chiefly confined to the culture and use of the common field turnip, the value of which, I apprehend, is not sufficiently appreciated in this country. I have frequently been told by farmers, that unless near market, they are scarcely worth raising, and as to fattening cattle with them, that was a thing utterly impracticable. Having seen that in England fat beef is made from turnips, with very little other food, and believing there was the same nutrition in them here as there, I resolved to satisfy myself. I, therefore, about the beginning of January last, purchased and stalled a pair of young oxen, or rather what the drovers would term coarse, poor, rough stags. They cost me $25. You may judge, by the price, they were no great things, as fair store cattle of the same weight were selling at the same time and place, for 17 to 18 dollars per head. I had two bushels of turnips chopped up morning and evening, and three quarts of ground oats and corn meal, or buckwheat meal, mixed with each mess, which I divided between them. In the middle of the day and at night they had alternately, oat straw, and corn fodder. In three months and an half they were good beef, but I kept them another month for a better market, and the latter end of April turned them out to pasture with the cows, still feeding them night and morning, but more sparingly. On the 25th of May, I sold them for $70.20, which was six dollars per hundred. A steer fattened by Mr. John Risden, at Hopkin's ferry, near Holmesburg, was slaughtered at the same time, and was put up about the same time that mine were. His was fattened on

12 quarts of Indian meal, about ½ bushel potatoes, and as much good clover hay as he could eat per day. There was very little difference in the quality of the meat; indeed I believe they would have commanded the same price at the shambles —and look at the difference of feed. The quarters weighed as follows:

One Stag	605 lbs.—	gut fat, 65 lbs.
One do.	565 —	do. 60
Mr. Risden's Steer, . .	650 —	do. 75*

* We shall at all times be glad to receive the communications of this intelligent and zealous cultivator, and we trust he will pardon our exhibiting, in a condensed view, the result of his very *satisfactory* experiment.

He states that "about the beginning of January, he purchased and stalled a pair of young oxen, which cost twenty-five dollars." "Two bushels of turnips chopped up morning and evening, *and three quarts of ground oats and corn meal, or buckwheat meal*, mixed with each mess," were "divided between them—in the middle of the day and at night, they had alternately, oat straw and *corn fodder*." In the "latter end of April they were *turned out to pasture*," "*still feeding them night and morning*, but more sparingly." "On the twenty-fifth of May," he "sold them for $70.20."

From the 5th of January to the 25th of May is 140 days. They consumed daily, that is morning and evening, 6 quarts of ground oats and corn meal, or buckwheat meal, = 840 quarts or 26¼ bushels at 50 cents - - - - - - - - - - - - - - - -	$13 12
They ate oat straw or corn fodder, which within five miles of Philadelphia, was worth, it is presumed, at least 15 cents per cwt., or $3 per ton. Allowing each ox to consume or waste 2 cwt. per week, the two oxen consumed or wasted, in 140 days, or 20 weeks, 4 tons at $3 per ton - - - - - - - - - - - -	12 00
Original cost of Oxen - - - - - - - - - - - -	25 00
	$50 12
Price obtained for the Oxen when fatted - - - - - -	70 20
	20 08
They ate 2 bushels of turnips chopped up morning and evening, that is, 4 bushels per day, during 140 days = to 560 bushels, which at 3 cents 4-7ths per bushel would amount to - - - - - -	20 08

Thus if our calculation be correct, it is established, that white turnips, when chopped and manufactured into messes, are worth three cents and four-sevenths of a cent per bushel. How much the labour of preparation is worth, we venture not to decide, but suppose it to equal at least the value of the manure.

To determine the comparative values or nutritive properties of vegetables, a series of experiments are necessary. They must be made upon various animals of the same breed—of similar ages—reared, fed, housed, managed, and even watered under similar circumstances.—EDITOR.

This establishes the fact, I think, that there is some virtue in a white turnip, although a celebrated writer, in eulogizing his favourite plant, the ruta baga, contemns it as the "poorest of all roots of the bulb kind, cultivated in the fields." Again, he says, "hogs are the most able tasters in all creation; they will eat nothing that is poor in its nature; a white turnip they will not touch unless they be on the point of starving."

My hogs, however, were not such epicures; I have abundance of proof, that I kept 13 hogs and pigs, last winter, almost entirely on white turnips; they had no other food besides a bucket full, containing less than a half bushel of rye shorts to a hogshead of water, and the sour milk from three tolerable cows. They were always ready for the turnip, and kept in excellent condition. The *fat hogs* fed on corn for five weeks before they were killed, ate them with avidity, until the day before they were slaughtered. I sometimes chopped up carrots, beets, and turnips together, to see if a preference was given. The larger swine ate indiscriminately; the smaller ate the turnips first, perhaps because they were more easily masticated. My milch cows had from ½ to ¾ bushels per day each, with three or four handfuls of meal, which kept up a flush of milk, and I have at no time had sweeter butter. Now, after what I have stated, you will readily conceive it would be as difficult for the aforesaid writer to convince me, that the white turnip is so very poor a thing as he represents, as it was for him to persuade the generous inhabitants of the Emerald Isle, that nine-tenths of the Irish potato is composed of "earth, straw and water." Yet this same writer admits, alluding to the devastation of the turnip-fly in England—"that if any man could find out a real remedy, and could communicate the means of cure, while he kept the means a secret he would be a much richer man than he who should discover the longitude, for about *fifty thousand* farmers would very cheerfully pay him *ten guineas a year each.*"*

What would Great Britain do with her numerous flocks, and herds, without her turnip crop; and this subject, I sincerely believe, is daily becoming of more importance to the people of this country, and to the state of Pennsylvania in particular. Our population is constantly and rapidly increasing; manufactures are increasing in the same or greater proportion, and wool-growers will multiply in the same ratio. Sheep, of which it is computed there are already about 2,000,000 in this state, are now decidedly the most profitable stock farmers can keep. Wool is *now* brought all the way from the state of Ohio to the Philadelphia market. Let the

* The Fly attacks Ruta baga as well as White turnips.—EDITOR.

sheep proprietors, then, if they wish to keep their flocks on cheap, succulent and wholesome food, during the winter months, look to the turnips, although the climate of this country may not be so congenial to the growth of this esculent as that of England. I have never found much difficulty in raising a crop, even in unfavourable seasons. The plan that I adopt and recommend is this: if, for instance, I wish to sow three or four acres, I begin early in the season, and pare half an acre or more, according to the state and appearance of the weather; as soon as the ground is well ploughed and harrowed, I immediately sow whilst fermentation is at work; this is of more importance than many people imagine. Always sow and plant on fresh ground, if possible. I then run a roller over, if the ground is not too wet, to press the seed to the earth, which I also consider of consequence, as vegetation will more speedily ensue. I would also advise that a harrow should be run over the seed before the roller, as it may give the plant two chances against its most formidable enemy, the fly. I fancy it has been pretty clearly ascertained that this seed will bear a deep covering. I generally sow about 1½ lbs. per acre. In two or three days, or as soon as convenient, and the weather permits, I prepare another half acre or more, and so on to the end. If, perchance, any particular sowing should have been cut off by the fly, or from drought or some other unforeseen cause did not succeed, I stir well the ground afresh and sow again. After the ground is prepared, the labour necessary to bestow on a turnip crop, compared with its value, is not worth mentioning. Sowing, pulling, topping and housing comprises the whole. I last year sowed some purple top amongst four acres of corn, broadcast; I presume I had two hundred bushels to the acre; what I sold in market I got 18½ to 25 cents for. But supposing them to have been worth 10 cents for farm use, my turnips were of more value than my corn of 40 bushels to the acre, at the price of that article last year. Some of the turnips weighed 4 lbs., and cultivated and harvested at less than one-fourth the expense of corn. If allowed to arrive at maturity, two men and two boys will pull, top and secure from the frost even in the field, put in heaps of 40 or 50 bushels each, and covered with earth, from 80 to 100 bushels, or more, according to their size; and still more, if thrown into vaults or cellars, in the course of a day.

The objections made by many, that turnips are not worth attending to in an Indian corn country, because they are a precarious crop, appears to me to be an unfounded prejudice. Corn, doubtless, is an excellent crop, and where justice is done to it, entitled to all those eminent qualities emphatically

ascribed to it, of "meal, meadow and manure." But corn, as well as the turnips, has its enemies, and requires constant attention, from the time it is planted until the ears begin to appear. I have shown to the best of my judgment and that of others, that where land is capable of producing 40 bushels of corn to the acre, that the vacant spaces between have yielded 200 bushels of turnips in a favourable season. But supposing the turnips fail entirely, which is not probable, if the method I suggest be adopted, what is there lost in this case but a little labour and a little seed; a consideration, I should hope, too insignificant to deter any husbandman, who studies his interest, from hazarding the experiment.

I am, dear Sir,
Your most obedient servant,
JAMES WILLIAMS.

JOHN HARE POWEL, ESQ.
Corres. Sec'ry of the Penn. Agricul. Society.

On Rape—Its cultivation and produce in Seed—Its value as Green Food for Neat Cattle and Sheep.

BY JOHN HARE POWEL, ESQ.

Powelton, Philadelphia County, 1827.

DEAR SIR,—In accordance with your request, I have prepared a notice on the cultivation, uses, and value of cole or rape.

I am not aware that rape had been cultivated extensively in any part of the United States, until 1824, when Mr. Miller and Mr. Phillips of this county, obtained crops so extraordinary in product and value, as to induce them to recommend it to the notice of their neighbours, by the only sort of evidence, which operative farmers will receive.

I have no knowledge of its cultivation, except from my observations abroad. It is highly valued in many parts of Europe, as well for its product in seeds, as for the large quantity of green food

which it affords throughout the greater part of the year.

It may be sown either broadcast, or as turnips, in drills—or, in beds, and be transplanted as other varieties of the Brassica or cabbage genus. The usual and most successful mode, is to sow from two to three quarts of seeds broadcast in June or July, when intended for green food, but in August or September, when destined to produce seeds in the next year.

The process of transplanting is too expensive in this country—the necessary hand-hoeing, unless the land has been well prepared by previous cleansing crops, would make rape, in the broadcast system, much more troublesome, than if cultivated in rows, admitting the introduction of a horse-hoe. In favourable seasons I should not hesitate, where land is cheap and labour is dear, to allow it, when intended for green food, to take its chance, without the aid of either hand or horse-hoeing.

It produces in ordinary seasons on rich alluvial, or other deep friable soils, from forty to seventy bushels of seeds, determined in quantity, very much, by the accuracy of tillage and the condition and nature of the land. Great care and precision are necessary in harvesting the seeds in June or July, of the year succeeding that in which they are sown. When the pods assume a brownish cast, and some of the seeds become black, the crop is reaped with sickles—laid regularly in handsful or *grips* in rows, where it continues until the straw becomes somewhat white—the seeds of the colour of which we find them in the shops. If they be allowed to become too dry, they fall out on the slightest mo-

tion—when carried too green, they are liable to be heated. At the proper time they must be thrashed in the field upon old sails or cloths, to which the crop should be carried upon sledges prepared with cloths, or by similar means. The seeds must be carefully spread in small quantities in granaries or on barn floors, and be occasionally moved.

Sheep and neat cattle are extravagantly fond of it—but of all plants, perhaps it is the most likely to cause them to be *blown.*

There is much difference of opinion as to its nutritive properties in the green state. I believe, that it quite equals the common cabbage, and very far exceeds turnips of all kinds in the quantity of nutrition it contains—in the value of the oil for various manufacturing purposes, and the excellence of the cake, after it has been expressed, for cattle food and the manure of drill crops, no question can be entertained.

It is not a certain crop—as it is exposed to all the enemies which attack turnips and cabbages—and is liable to be injured at the season of blossoming by mildew and sometimes by frost.*

* This excellent plant and mangel wurtzel, were as early as the year 1788, brought into the view of our farmers, by the original Philadelphia Society, which having two years before recommended clover and gypsum, continued its career of exertion and usefulness, until the year 1793, when the President, and with him that Society, died.

Extract from the Report of a Committee appointed by the present Philadelphia Society in 1826, *to inquire into the proceedings of the Old Philadelphia Society.*

"The Committee beg leave further to report, that of all the members who composed the old Philadelphia Society, none of the officers of the present Philadelphia Society" * * * * * * *

"But it does appear that Mr. Bordley, Mr. Powel and Mr. Clymer, were the most active officers of the association—that Mr. Powel as President attended every meeting but five from the organization of the Society in 1785, until March 1793—that in the summer of 1793, he having died, no other meeting of the Society was ever held."

Philadelphia County, February 1, 1827.

TO JONATHAN ROBERTS, Esq.

President of the Pennsylvania Agricultural Society.

Dear Sir,

By the frequent discussions which have appeared on particular breeds of cattle, among gentlemen whose liberal efforts must vindicate them from all suspicion of deception, I apprehend that some mistake has arisen from their estimates having been formed on specimens of the respective breeds, varying so much in character and properties, as to make it essential that they be classed as VARIETIES *of a race, or even as individuals of distinct breeds.*

I am the more confirmed in this impression, as some of these gentlemen are separated by hundreds of miles, and it is probable that many of them who have been most prominent in these discussions, have never had an opportunity of inspecting those individuals which my inquiries, and the examination of very extensive correspondence with the most eminent English breeders, have led me to consider as fair examples of the breed which has been the subject of dispute.

Independent of the liberal intentions by which various persons are actuated in importing, and multiplying, European breeds of stock, the emulation excited by Cattle Shows, and the distinction conferred upon the subject, by eminent men in many parts of the United States, cannot fail to create a strong desire in the parties and their friends to establish the grounds which they have taken, involving the soundness of their opinions, however aloof from any other views than those which the most generous minds might entertain.

I am aware that this is a hacknied topic, not likely to afford interest to such as are not actively engaged in the employment to which it refers; but as I conceive a very large portion of our community, and certainly not the least useful, are practically occupied in pursuits with which it is intimately connected, I have taken some trouble to make myself acquainted with its bearings, and have toiled through a mass of evidence, which has convinced me not only of the entire justice of the following statements, but of the correctness of the pedigrees which I have given.

In the language of the discriminating Editor of the American Farmer:—"Every farmer who has ani-"mals worthy of being selected and reserved as pro-"pagators of their kind, should NAME *them, and accu-*

"rately note their ages and pedigrees. Extracts from "Stock Registers, thus furnished and recorded, would "effectually constitute a 'HERD BOOK' of autho- "rity for general reference, preventing impositions, "giving greater value to the good, excluding the spu- "rious, and serving effectually the fair purposes and "laudable objects, of both venders and buyers."

I am of opinion that the pedigrees of many of the animals which have been sent to America, at high prices, will, if critically examined, prove to be defective on either side. Yet where no concealment has been practised—where the deficient pedigree has been given —or where none, except upon one side is shown, no intention to deceive can be imputed, nor can censure be attached to the English breeder who sends to a foreign land, animals which he supposes quite good enough for its purposes, if he require not more than their value at home, and especially if he avow that he does not deem pedigree essential to establish the reputation of his breed.

With a view to make the pedigrees clear to American husbandmen, who are not generally accustomed to the subject, and who have no means of reference to the Herd Book, the origin of each animal has been traced on both sides to its source, and hence when animals

were in any degree allied, repetition was unavoidable. It is not necessary to observe, that no man is expected to read the pedigrees through, and if he did not, without the adoption of this mode, the desired information could not be had.

I am, dear Sir,

Very truly yours,

JOHN P. MILNOR,

Recording Secretary Penn. Ag. Soc.

THE PENNSYLVANIA AGRICULTURAL SOCIETY, AT THEIR MEETING IN 1825, NOTICE PARTICULARLY THE IMPORTANCE OF IMPROVED BREEDS OF LIVE STOCK, AND UNEQUIVOCALLY DECLARE THE IMPROVED DURHAM SHORT-HORNS TO BE "THE RACE OF NEAT CATTLE WHICH EXPERIENCE HAS PROVED TO BE SUPERIOR TO ALL WHICH WE HAVE EVER SEEN."

JOHN P. MILNOR,
Recording Secretary.

Extract from the Report of the Committee on Neat Cattle at the Pennsylvania Show of 1824.

Your committee do not attempt to designate the points, or characteristics of the various animals which have been submitted to their view, as the display of nearly an hundred and fifty neat cattle of extraordinary excellence precludes the possibility of their adhering, in the present instance, to the rule which had been observed on former occasions; but they cannot avoid expressing their great satisfaction at the decided improvement which has been made in the stock, by the introduction of Mr. Powel's "IMPROVED DURHAM SHORT-HORNS," WHOSE BLOOD CAN BE TRACED IN NEARLY ALL THE BREEDING ANIMALS, WHICH WERE DISTINGUISHED AS BEST FITTED FOR THE GENERAL PURPOSES OF THE COUNTRY, BY UNITING, WITH FINE FORMS, THE REQUISITES FOR THE *dairy* AND THE *stall.*

THOMAS SMITH,
THOMAS SERRILL,
MATHEW ROBERTS,
RICH. B. JONES,
C. CHURCHMAN,*
Committee for Neat Cattle

* All extensive graziers or dairy farmers.

MARYLAND CATTLE SHOW.

June 1, 1825.

The Committee on Neat Cattle report, that they award to Col. Lloyd, for his bull Champion, the premium, "as the best full blood Improved Short-horn Bull. Champion having heretofore received a discretionary premium on his arrival in this country, his owner generously declined entering him for the premium to be awarded to the best bull of any breed—believing, we presume, with this committee, THAT TO BE THE BEST BULL OF THE IMPROVED SHORT-HORN BLOOD, IS TO BE THE BEST BULL OF ANY BREED." * * * *

EDWARD N. HAMBLETON,
ROGER BROOKE,
WM. CARMICHAEL,
CHARLES K. DORSEY,
REUBEN M. DORSEY,
JOHN KELSO.

At the BRIGHTON and WORCESTER Shows, Short-horned cattle received the highest commendation and the largest rewards.

Opinion of a Committee of the Philadelphia Agricultural Society in favour of Short-Horns—Annual Meeting, 1827.

Mr. Powel having exhibited one of his imported heifers of the Improved Durham Short-horn breed, the committee added, "she possessed, in a high degree, all the fine points for which that valuable and beautiful breed of cattle is celebrated.—Notwithstanding she had been kept, thus far, through the winter without grain, she was in high condition; the best evidence that could be offered of her disposition to fatten on simple food."

AARON CLEMENT,
MICHAEL NEWBOLD,
WILLIAM PHILIPS,
Committee.

Mr. Powel adduced evidence of the dairy properties of certain families of the Improved Short-horned breed, among which were recent letters from Dr. Elmer, of New-Jersey, and Mr. Carpenter, of Lancaster county.

AT FOUR CATTLE SHOWS HELD BY THE PENNSYLVANIA AND PHILADELPHIA AGRICULTURAL SOCIETIES, FIFTY-SIX ANIMALS OF SHORT-HORNED BREED, TOOK PREMIUMS EQUAL TO $1160, although at one of the shows, the principal herd of Short-horns did not contend for a prize. It is believed that in no instance has any THOROUGH-BRED individual of the Improved Short-horned breed been beaten by any animal, of any other breed, at any show in the United States.

We are aware, that cattle with SHORT HORNS, but without the PEDIGREE, PROPERTIES, OR POINTS of the IMPROVED BREED, although sometimes purchased at great cost, have been condemned as unthrifty, and ill adapted for American farms—and we are also aware that some of those, which have been imported with DEFECTIVE pedigrees, have been excelled, but THEY should not be received as specimens of the IMPROVED breed.

From Bailey's Survey of Durham, made by order of the British Agricultural Board.

As a proof of the estimation in which this breed of Short-horned cattle is held, not only by skilful judges from distant parts of the empire, *but in its own immediate neighbourhood*, it is merely requisite to adduce the catalogue of Mr. Charles Colling's sale, which took place at Ketton, on the 11th of October, 1810, in consequence of his having declined business.

COWS.

	Guineas.		Guineas.
Cherry, 11 years old,	83	*Lily*, 3 years old,	410
Kate, 4 years old,	35	*Daisy*, 6 years old,	140
Peeress, 5 years old,	170	*Cora*, 4 years old,	70
Countess, 9 years old,	400	*Beauty*, 4 years old,	120
Celina, 5 years old,	200	*Red Rose*, 4 years old,	45
Johanna, 4 years old,	130	*Flora*, 3 years old,	70
Lady, 14 years old,	206	*Miss Peggy*, 3 years old,	60
Laura, 4 years old,	210	*Magdalen*, 3 years old,	170
Cathleen, 8 years old,	150		

BULLS.

Comet, 6 years old,	1000	*Northumberland*, 2 years old,	60
Yarborough, 9 years old,	55	*Alfred*, 1 year old, by Comet,	110
Cupid. Not sold.		*Duke*, 1 year old, by Comet,	105
Major, 3 years old,	200	*Alexander*, 1 year old, by Comet,	60
Mayduke, 3 years old,	145	*Ossian*, by Windsor,	76
Petrarch, 2 years old,	365	*Harold*, by Windsor,	50

BULL CALVES.

	Guineas.		Guineas.
Ketton, by Comet,	50	*Narcissus*,	15
Young Favourite,	140	*Albion*,	60
George,	120	*Cecil*,	170
Sir Dimple,	96		

HEIFERS.

Phœbe, 3 years old,	105	*Lucy*, 2 years old,	132
Young Duchess, 2 years old,	183	*Charlotte*,	136
Young Laura, 2 years old,	101	*Johanna*,	35
Young Countess,	206		

HEIFER CALVES.

Lucilla,	106	*Ruby*,	50
Calista,	50	*Cowslip*,	25
White Rose,	75		

The total amount of the 47 lots (one being unsold) is £6073 4*s*. or nearly £130 each.

To illustrate a remark in the prefatory letter, let it be supposed that a bull was sent to America, called "C, got by a son of B C," his dam by "B C;" his g. d. by "P;" his gr. g. d. by "N."

The dam of the son of B C not being given, she was, most probably, a common cow—the gr. gr. g. d. of C, on the female side, not being traced, it is to be presumed she was also a common cow—and the dam of P, which begat C's g. d. not being known, she was also, most probably, a common cow.

Thus C's gr. g. d., on the female side, was half-blood—his g. d. by an half-bred bull, and out of an half-bred cow, was half-bred—his dam, by a full-bred bull, must be three-fourths bred—hence his sire being but half-bred, C can possess but 5-8ths of Improved Short-Horn blood.

THE ORIGIN

OF THE

IMPROVED DURHAM SHORT-HORNS.

Extracts from "IMPROVED SHORT-HORNS AND THEIR PRETENSIONS," *by the Rev. Henry Berry, of Acton Rectory, England—a gentleman distinguished not merely as an interesting and scientific writer, but as a sagacious breeder of cattle, who has gained on various occasions, honorary rewards for his Essays, as well as for his beasts.*

To the banks of the river Tees, separating the counties of Durham and York, reference is to be had for an account of the originals of the improved Short-horns.—There, upwards of eighty years ago, existed a breed of cattle, for a description of which the author is indebted to an old and celebrated breeder now living,—in colour resembling what is called the improved breed of the present day, except that the fashionable roan was not quite so prevalent; they are described in general character also to have differed very little from their descendants. Possessing a fine mellow touch, good hair, light offal, particularly wide carcasses, and deep fore-quarters, they were also justly celebrated for extraordinary proof when slaughtered,—resembling thus closely their descendants of the present day. * * * *

From all the information which can be collected, it ap-

pears that the breed of cattle thus described, was crossed with, and probably improved by, importations from the Continent. Several spirited individuals, at that early period, had devoted much attention to the improvement of the breed of cattle then prevailing in the counties of Durham and York, and, amongst others, Sir William St. Quintin, of Scampston, imported cows and bulls from Holland. In due time, the produce of these animals was more widely diffused, and, crossed with the best stocks of the country, which possessed the same characteristics, became distinguished as the *Tees-water Short-horns*, uniting, in a wonderful degree, good grazing and dairy qualities. * * * About eighty-five years have elapsed since Mr. Milbank devoted his attention to this branch of rural economy. * * * * A cow, bred from his stock, and at that time the property of Mr. Sharter, of Chilton, slaughtered when twelve years old, having produced several calves, weighed upwards of one hundred and ten stones.* This cow was the daughter of the *old Studley bull*, one of the most celebrated ancestors of the improved Short-horns. He is described to the author by a person who often saw him, to have possessed wonderful girth and depth of fore-quarters, very short legs, a neat frame, and light offal. He was the grandsire of *Dalton Duke*, bred by Mr. Charge, and sold by him, at the then high price of fifty guineas, to Messrs. Maynard and Wetherell, in whose possession he served cows, at half-a-guinea each. From the old Studley bull are also descended *William* and *Richard Barker's*, and *Mr. Hill's bulls*, all animals of the highest reputation in their day, and the originals of the improved Short-horns. * * * * * *

* Or 1540 lbs.

Sir William St. Quintin imported several cows and bulls from Holland; and it may be added, that from him Sir James Pennyman, who possessed estates in the counties of York, Durham, and Northumberland, and was desirous to extend this breed further north, obtained the cattle necessary for his purpose. From these he presented six cows and a bull to Mr. George Snowden, of Hurworth. * * * *

In the mean time, a person near Hurworth, having in his possession a cow which there was every reason to believe was bred from some of the stock which had been imported, she was on this account, and from her superior form and quality of flesh, thought worthy to be introduced to Snowden's bull, and her produce afterwards became an object of celebrity as the bull *Hubback*. This cow, when removed from her usual pasture in the highways to good land near Darlington, became so fat that she did not again breed, and was consequently slaughtered. Her son evinced the same extraordinary disposition to fatten, and became useless; which was also the case with *Bolingbroke*, and several of Mr. Colling's best bulls, until he adopted the plan of keeping them in the lowest possible condition. * * * It shall suffice to remark, that in Mr. C. Colling's bull *Foljambe*, the Barningham and Hubback's blood were united; that this bull was the great grand-sire of *Comet*, and rendered, by Mr. C. Colling's own account, the most essential service to his stock. Should the reader feel desirous to trace the pedigrees of the animals here mentioned, he is referred to "*Coates's Herd Book*," where every particular is faithfully stated. * * * * *

DAIRY PROPERTIES

OF

IMPROVED DURHAM SHORT-HORNS.

From the Rev. Henry Berry's Pamphlet.

The instances which are given as to milk, were obtained by the author on the spot; and though he would gladly have included any others, had they been furnished, it appears to him that no trifling force is afforded to his argument, by the circumstance of the cases which are set forth being derived from one stock,—irrefragable proof being thus furnished that they are not solitary instances, but happening in the regular course.

The cows recorded, are the property of J. Whitaker, Esq.* of Greenholme, near Otley, and are of the most esteemed blood. [*See Herd Book.*] They have given, and give, twice a-day, as follows:—

YELLOW ROSE, AT THREE YEARS OLD, FOUR GALLONS TWO QUARTS, TWICE A DAY.

YELLOW ROSE, AT FOUR YEARS OLD, FOUR GALLONS THREE QUARTS, TWICE A DAY.

RED DAISY, FOUR GALLONS, TWICE A DAY. (*She is the g. d. of Mr. Powel's Desdemona, and the g. d. of Mr. Powel's Betty, on the male side.*)

* Mr. Whitaker has with singular liberality made great exertion to aid the selection of neat cattle and sheep for Pennsylvania, refusing on all occasions, when animals from his fold were chosen, to fix the prices, leaving them to be determined either by the agent in England, or by his friend in America.—*Am. Ed.*

MAGDALENA, UPWARDS OF FOUR GALLONS, TWICE A DAY.

WILDAIR, FOUR GALLONS, TWICE A DAY. (*The Dam of Mr. Powel's Betty.*)

WESTERN LADY, THREE GALLONS TWO QUARTS, TWICE A DAY. (*The Dam of Mr. Powel's Malcolm.*)

VENUS, SIXTEEN YEARS OLD, THREE GALLONS ONE QUART, TWICE A DAY. (*The g. d. of Mr. Powel's Volante.*)

ALFREDE, THREE GALLONS, TWICE A DAY. (*The g. d. of Mr. Powel's Gloucester.*)

ADELA, FIRST CALF, THREE GALLONS, TWICE A DAY. (*The Dam of the same.*)

YARM, THREE GALLONS, TWICE A DAY. (*The Dam of Mr. Powel's Yorkshire Belle.*)

THESE COWS ARE STEADY MILKERS, POSSESSING GREAT INCLINATION TO FATTEN, AND MR. WHITAKER CANNOT BE TOO HIGHLY COMPLIMENTED ON HIS SUCCESSFUL EXERTIONS TO COMBINE THE TWO QUALITIES. THE REMAINDER OF HIS STOCK WILL BE FOUND BY NO MEANS CONTEMPTIBLE AS MILKERS; BUT IT IS THOUGHT UNNECESSARY TO REMARK UPON ANY ORDINARY QUANTITIES.

WITHOUT ENTERING FURTHER INTO PARTICULARS, THIS SUBJECT MAY PROPERLY BE DISMISSED WITH A REMARK OF MR. C. COLLING'S, THAT THE *DUCHESS* AND *DAISY* TRIBES, WITH WHOSE MERIT AS GRAZIER'S

STOCK, THE PUBLIC ARE WELL ACQUAINTED, WERE ALL GOOD MILKERS, POSSESSING THAT VALUABLE *UNION* OF QUALITIES OF WHICH IT IS THUS OBVIOUS EVERY BREEDER OF SHORT-HORNS MAY AVAIL HIMSELF, WHO CHOOSES TO MAKE IT THE OBJECT OF HIS CARE.

IT REMAINS FOR THE AUTHOR TO REMIND HIS READERS, THAT IT IS OF THE *IMPROVED* SHORT-HORNS HE WRITES, AND NOT OF THE GENERAL HERD OF CATTLE, WHICH ARE SOLD AS SHORT-HORNS, FROM THE NORTHERN DISTRICTS. * * * *

[*Improved Short-horns and their Pretensions, page 42.*

And it may be added, nor did he allude to those sent to America without pedigree, or claims to the properties of the high bred race.

The success of Mr. Whitaker's breed in *beating* the Herefords on various occasions, and particularly in 1824, when Wharfdale (by ENCHANTER, dam Miranda*) "*beat*" all the Short-horns, and afterwards *the field*, as well as his triumph at the Doncaster show in 1825, when Matilda, by WESTERN COMET, beat Mr. Champion's, &c., proves that in points and feeding properties, *his families* of Short-horns are not less remarkable than in excellence for the churn.—*Am. Ed.*

* Enchanter is the sire of Malcolm—Western Comet was the sire of Western Lady, Malcolm's dam.—(*See Herd Book.*)

PROOFS OF EARLY MATURITY,

AND

LARGE RETURNS FOR FOOD CONSUMED.

A heifer, three years old, by a grandson of the old Studley bull, bred by Miss Allen, of Grange, fed on hay and grass alone, weighed 1260 pounds.

Mr. George Coates slaughtered a heifer, by Snowden's bull, the sire of Hubback, fed on turnips and hay, which weighed 952 pounds, at two years and two months old. * * *

Thus much for the Tees-water cattle, the *originals* of the improved Short-horns. * * * *

From this breed of cattle, possessing such recommendations, Mr. Charles Colling selected his original stock. * *

Mr. Arrowsmith, of Ferryhill, who fed his Short-horns at two years old—

In 1801, sold four for £25 each, two steers and two heifers.

1802, sold six for £17 10*s.* each, three steers and three heifers.

1803, sold four for £17 0*s.* each.

1804, sold six for £18 10*s.* each.

1805, sold six for £17 10*s.* each, two steers and four heifers. * * * * * * *

The time for selling from the beginning to the latter end of May.

They were managed as follows:—In the first winter they got straw in a fold-yard, with nearly as many turnips as they could eat. In May they were turned to grass; in November, put to turnips through the winter, and turned out to grass the first week in May.

A twin heifer, belonging to Mr. Arrowsmith, calved the last week in April, being kept the first year as the common stock, was entered for a sweepstakes to be shown in June, when two years old, and was then put to grass, with other stock of the same age, in the usual pasture. In November she was estimated to weigh 392 pounds, when she was put to ruta baga, and hay and oil cake, of which she ate four hundred weight, with two bushels of bean-meal, and one bushel of barley. She went to grass on the first of May, and had, from that period, neither cake nor corn. On the 23d July, it was the unanimous opinion of the best judges, that she weighed 812 to 840 pounds, having gained 420 pounds in thirty weeks. * * * * *

Mr. Walton, of Middletown-in-Tees-dale, had been (in 1808) in the habit of selling his steers at two years and a quarter old, for £20 to £30 each, their weight being from 700 to 756 pounds.

His mode of keeping is as follows:—The cows seldom calve sooner than April; the calves get new milk for the first three weeks; after that a moderate quantity of scalded skimmed milk, mixed with oil cake boiled in water, about two quarts of each, along with good hay, for about three weeks; after which they do very well in the pastures, without any kind of hand feeding, until the latter end of November, when they are treated in the same way as Mr. Arrowsmith's, and never get either cake or corn.

Mr. Mason, of Chilton, in the course of an experiment to ascertain the weight of beef gained by the food given (turnips), found three steers, under three years old, to have gained 280 pounds each in twenty weeks. The three animals averaged 980 pounds each. * * *

A steer, bred by Mr. Simpson, of Aycliffe, and fed by Mr. C. Colling, on grass, hay, and turnips, weighed, when slaughtered, at four years old, 1880 pounds. * * *

A cow, by Mr. Coates' bull Houghton, bred by Mr. Foljambe, and slaughtered at Sheffield, when twelve years old, weighed 1395 pounds. Both these animals appeared very small.

Major Rudd, of Marton-in-Cleveland, obtained the premium offered by the Cleveland Agricultural Society, in 1811, for the best steer, under three years old, fed on vegetable food.* The steer he exhibited was sold to the butcher for ten shillings per stone, and slaughtered when three years and thirteen days old: the weight of his four quarters 1344 pounds. * * * * *

Sir Charles Morgan's four years old ox, by Furioso, weighed, four quarters, 2058 pounds.

That Short-horned cows, of the improved breed, having high pedigrees, and the greatest tendency to fatten, not only give a sufficient, but, in many cases, an extraordinary, quantity of milk, the preceding account of that breed has satisfactorily shown; and the instances of the latter are sufficiently numerous to present to any person, desirous of combining the two qualities, the opportunity of selecting a stock productive for the dairy, and inferior to none for the grazier's use.

* * * * *

* *i. e.* without corn, cake, or meal.

Short-horns and Herefords compared.

A Short-horned steer of Colonel Cooke's, fed on *potatoes and straw*, was slaughtered when two years and twenty-two days old. His four quarters weighed 1008 pounds. * *

"*Dalkeith, Mid Lothian, Jan.* 12*th*, 1824.

"Sir,—I observed in your paper of the 22d December last, that an interesting exhibition of live stock had taken place at Smithfield; the age and weight of some, you state as follows:

"A Hereford ox, six years old, weighing one hundred and ninety-nine stones* six pounds.

"A ditto, three years and nine months, weighing one hundred and forty-three stones two pounds.

"In the same paper you take notice of some exhibition of a similar kind in this quarter. * * * * *

"In reference thereto, I beg to state, that Mr. John Rennie, of Phantassie, produced at the show of fat cattle, before the East Lothian United Agricultural Society, in November last (of which I had the honour of being one of the judges), six steers of the pure Short-horn or Tees-water breed, from eighteen to twenty months old, for which the first premium for fat and symmetry was awarded. Three of the best he is keeping on for another year, to ascertain the improvement they will make, and the other three were sold to a friend of mine in Edinburgh; the dead weight, or four quarters, of one of these weighed one hundred and eighteen stones one pound, or 1653 pounds.

* It may be proper, in this place, to remark, that whenever, throughout this work, the weight per stone is stated, the stone of fourteen pounds is intended, unless another rate of computation be particularly expressed.

"The same gentleman presented at the Highland Society's competition of fat stock, in November last, several of the same breed, which also carried the premiums for symmetry and fat. Two of these I purchased, viz.—one aged two years and four months, four quarters weighing one hundred and fifty-three stones seven pounds, or 2149 pounds; and one aged three years and six months, four quarters weighing one hundred and sixty-nine stones seven pounds, or 2373 pounds. The last mentioned had (besides) thirty stones one pound, or 421 pounds of rough fat, all Smithfield weight.

Your most obedient servant,

"WILLIAM PLUMMER,

"*One of the judges of fat cattle, of the East Lothian Agricultural Society.*

"*To the Editors of the Farmer's Journal.*"

Before this extract is dismissed from the reader's notice, let him apply the following test to the Hereford breeder's position and objection, and himself decide upon their title to public regard:—

	lbs.
A Hereford ox, six years old, weighed - - - -	2792
A Hereford ox, three years and nine months old -	2004
A yearling Short-horned steer - - - - - - - -	1652
A Short-horned steer, two years and four months old	2149

* * * * * *

The Short-horns are uniformly docile, and gentle in the extreme, the bulls scarcely ever becoming mischievous, and the cows and heifers permitting access under all circumstances, and for every needful purpose. The Herefords are the very reverse.

MESSRS. COLLINGS HAVE FREQUENTLY SOLD COWS AND HEIFERS FOR 100*l.* AND BULL CALVES AT 100*l.* MR. CHARLES COLLING HAS REFUSED 500*l.* FOR A COW; AND IN 1807, MR. MASON REFUSED 700 GUINEAS FOR A COW.

THESE GENTLEMEN LET BULLS OUT BY THE YEAR: THE PRICES FROM 50 TO 100 GUINEAS; AND THE PUBLIC ARE SO FULLY CONVINCED OF THEIR MERITS, THAT THESE CELEBRATED BREEDERS CANNOT SUPPLY THE DEMAND FROM THE PURE BLOOD, WHICH THEY ARE AS CAUTIOUS OF PRESERVING, AS THE AMATEURS OF THE TURF ARE THE BREEDS OF THEIR RACE HORSES, AND WHICH THE TAKERS OF BULLS ARE BECOME SO WELL ACQUAINTED WITH, THAT THE PRICES THEY GIVE, ARE IN PROPORTION TO THE GOOD QUALITIES OF THE INDIVIDUALS, AND MERITS OF THEIR PROGENITORS—MORE REGARD BEING PAID TO THEIR PEDIGREE THAN TO ANY THING ELSE; FOR THIS PURPOSE THEY HAVE BOOKS CONTAINING THE FULL PEDIGREE OF THEIR STOCK, SIMILAR TO THE STUD BOOK OF RACE HORSES, BY WHICH ANY PERSON WANTING TO PURCHASE ANY OF THEIR STOCK, OR TO HIRE BULLS, MAY SEE HOW THEY ARE DESCENDED.

The DURHAM Ox was bred by Mr. Charles Colling, of Ketton, in the year 1796: his form and nice handling, indicated every disposition to fatten at an early age, and the expectations entertained of him by the best judges, were not

disappointed: at five years old he was not only covered thick with fat upon all the principal points, but his whole carcass in a manner loaded with it, and was then thought so wonderful an animal, and so far exceeding whatever had been seen before, that he was purchased to be exhibited as a show, by Mr. Bulmer, of Harmby, near Bedale, in February, 1801, for 140*l.*: at this time he was thought to weigh 168 stones, his live weight being 216 stones, (14 lbs. to the stone): this did not arise from his superior size.

Mr. Bulmer got a proper carriage made to convey him in, and after travelling with him five weeks, sold him and the carriage at Rotheram, to Mr. John Day,

	£.	s.	d.
On the 4th of May, 1801, for - -	250	0	0
On the 14th May, Mr. Day could have sold him for - - - -	525	0	0
On the 13th June, for - - -	1000	0	0
On the 8th July, for - - -	2000	0	0

Mr. Day preferred keeping him, persuaded that his merits were such, as would insure him a greater return: but these prices are strong proofs of his very superior excellence, to whatever had been seen in those districts before.

Mr. Day travelled with him nearly six years, through the principal parts of England and Scotland, and arrived at Oxford, in February, 1807, where, on the 19th, the ox by accident dislocated his hip bone, and continued in that state until the 15th April, when he was obliged to be killed; and notwithstanding he must have lost considerably in weight, during this eight weeks of illness, yet his carcass weighed

Twenty-eight Short-horns sold for $22,948.

	sts.	*lbs.*	
Four quarters	165	12	(14 lbs. to the stone.)
Tallow	11	12	
Hide	10	2	

This was his weight at 11 years old, under all the disadvantages of six years' travelling in a jolting carriage, and eight weeks of painful illness: had he been kept quietly at Ketton, and properly fed until seven years old, there is little doubt but he would have weighed more than he did at ten years old, at which age Mr. Day states his live weight to be nearly 34 cwt. or 270 stones.

From which if there be taken for offal 50 ditto.

Leaves the weight of the carcass 220 stones.

Extract from the Memoirs of the Pennsylvania Agricultural Society.

It appears by Bailey's Survey of Durham, that at Colling's sale in 1810, seventeen cows were sold for 2,802 pounds 9 shillings sterling—eleven bulls for 2,361 pounds—twenty-eight animals, thus produced $22,948 67. That Major Rudd paid 400 guineas for Lady of 9 years—for Lily 400 guineas—for Peeress 170 guineas—for Petrarch 375 guineas; that Messrs. Wetherill & Co. paid for Comet of 6 years, 1000 guineas. Mr. Champion, and Col. Mellish have since paid 450 guineas, for the services of Charles, during 2 years. A regular record is kept, in the Herd Book, of the pedigrees of the animals of pure blood. Although one hundred and forty breeders—130 bulls and nearly 3000 heifers and cows, are enumerated in this volume, it will be seen, by Major Rudd's letter, that their cost continues to be as high as it was 17 years since.

Extract of a Letter from a Gentleman distinguished as one of the most successful breeders in England.

"Mr. Whitaker's mode of rearing Improved Durham Short-horns is nearly the same, as that of the breeders in the north. Bull calves run with good nurses, until about six or eight months old—from that age until about one year old, they have hay, turnips, and a little linseed cake, afterwards hay and turnips, or grass.

"Heifer calves are taken from their dams when about three weeks old, are put to cows, giving about half the usual quantity of milk, or two calves are put to one cow "full of milk." With them, they run in the pastures until September, when they are put to "fog." So soon as the weather becomes severe, they have a shed, or house to run into, with straw and turnip tops, and sometimes a little linseed cake. The following summer they are put to grass, without any thing else, until the winter, when they have straw and turnips, as the dry cows; but when in milk they have straw, turnips, a little linseed cake, or a little bean meal: "*for milk,*" he observes, "we must have." Bean meal produces more milk than linseed cake, but cake answers better for producing flesh and fat. This method of rearing calves is found quite as economical as by the pail.

"When the stock have fairly begun to feed, he considers it most profitable to give them as much of the best food as they will eat, taking care that the food of all kinds is consumed before they have a fresh supply; and that every thing about them is kept clean.

"First in the morning a little hay is given, next a few tur-

nips, after, about six pounds of cake—in the afternoon, the same routine is observed.

"No apology, I assure you, was necessary in addressing your letter of December last to me, on agricultural subjects. The perusal of it, and the book which you were so kind as to send, gave me great pleasure. My experience justifies me in saying that I coincide with your observations in general. Comet certainly gained great celebrity, yet his produce were mostly unequal to himself. It is said 'like begets like,' but this bull never was the father of as good a one as himself; it was otherwise with his sire. Favourite stamped all his offspring as superior to himself—perhaps no bull ever begat so many good bulls and cows.

"Hubback stands first with most breeders, but from all I can collect from the oldest breeders, particularly Mr. ——, who has excellent judgment, and had a better opportunity of seeing the stocks of the Collings, Charges, Maynards, &c. than any other man, being at that time a breeder, and almost daily with them, I believe the STUDLEY WHITE BULL was unequalled by any of his day. Mr. —— says he had the best and greatest fore-quarters he ever saw, with as great an inclination to fatten. Mr. Charge used him five or six years, and till of late years all his stock were descended from him.

"I am happy to confirm your opinion, (*I speak from long experience,*) that selections may be made of good milkers from the *purest* blood. Mr. Whitaker is largely concerned in the cotton business, and having to *provide milk for a large establishment* in 1810, he attended Mr. Charles Colling's sale. At the same time he saw a yearling bull at Mr. Charge's, which he bought, and afterwards named WESTERN COMET. This bull, I may say, never begat a bad animal—they all proved great graziers, with the best backs, quarters, crops, &c. &c., of any I ever saw.

"I agree with you, that when a full blood dairy cow has rest, she will lay on fat as quick as the grazing tribe—consequently for most purposes, this kind is undoubtedly the best, and in the end most profitable.

"MR. WHITAKER'S FREDERICK* is much admired, and answers your description. His head is good—horn small and beautiful—neck fine—shoulders lay well—breast good and prominent—girth and crops good—barrel very good—hind quarters long and handsome—tail fine and tapering—huggins and flank extraordinary—touch mellow, and hide not too thin, with an excellent quality of meat under it—plenty of hair, mossy, &c.—and to conclude, he stands upon fine boned legs.

"I should prefer a cow yielding about three gallons a meal (i. e. 24 quarts a day) ale measure, to one giving more. The best milkers have descended from the DAISYS, DUCHESSES, and WILDAIRS.

"When I was in search of a bull for you in March last, I informed Mr. —— what I wanted. He replied—if I wanted one, I should go to MR. WHITAKER'S fold, for we have nothing so good in this country as FREDERICK'S stock.

"WESTERN LADY exceeds all Mr. Whitaker has ever had, for both purposes, i. e. milking and feeding."

Thus it appears from various sources, "that there is a dairy, as well as a grazing or feeding tribe of Improved Short-horns;" that the STUDLEY BULL—HUBBACK—FOLJAMBE—and FAVOURITE, were the most celebrated bulls of their day—that *from them have descended the very best animals* of the race; and that *to them* the breeders are most anxious to trace the origin of their Short-horn stock; and it will be found,

* Frederick is the sire of Gloucester—Bolivar—Volante—Yorkshire Belle—Lady Betty—and Desdemona.

on reference to the Herd Book, that SNOWDEN's—ROBSON's—WAISTELL's—BROWN's—BARKER's—SMITH's—JOLLY's—ALCOCK's and MASTERMAN's bulls, were the males from which these bulls were derived.

It may be seen by the Rev. Mr. Berry's pamphlet—the foregoing extracts—and by other sources, that the DUCHESS, DAISY, and WILDAIR strains, are evidently those which are considered the most valuable for dairy purposes. And to the same pamphlet reference may be had to prove, how completely this opinion is established, by THE DAIRY PROPERTIES OF MR. WHITAKER's COWS, many of them yielding from 24 to 32 quarts per day.

Extract.

"We have also examined the Durham Short-horned cattle. We have never seen animals better fitted for the yoke in gait; the bull, although appearing heavy from his round shape, moves with great vigour, and places his feet so accurately, that the tracks made with his fore feet, are occupied by his hind feet as he advances. The heifers also move with alacrity, and have very straight legs.

"We are all dairy farmers, and have visited Powelton at our own suggestion, to satisfy our minds as to the dairy properties of the females. We do not hesitate to say that they have all the appearance of great milkers, having also yellow skins. We think the heifers excel in these points, all which we have seen.

LLOYD JONES,	ISAAC W. ROBERTS,
PAUL JONES,	DAVID ROBERTS,
JOHN ROBERTS,	JOSEPH TRASEL,
GEORGE W. ROBERTS,	ISAAC HESTON.

Philadelphia County, Jan. 10, 1826.

[See American Farmer, vol. 7, page 361.

ON THE

PROFITS AND GENERAL ADVANTAGES

ARISING FROM

IMPROVED BREEDS OF CATTLE.

York, (Penn.) September 23, 1826.

Sir,—I write to give you some idea of my progress in the stock way, and I can now speak largely of my profits arising from Yorkshire* and Hebe;† enough to satisfy any farmer that they are much the most profitable investment of so much money that can be obtained. Within the last eighteen months, the services of Yorkshire have brought, according to an account kept by the person who has the charge of him at the farm, $200 clear of expenses. I have also one noble bull calf from Hebe, now eight months old,

* YORKSHIRE, got by Mr. Carpenter's Lothario, dam an imported cow selected in England expressly for dairy purposes.

Mr. Carpenter's *Lothario*, begotten in England by Mr. Ashcroft's George, dam Moss Rose, imported in 1821, by Fish and Grinnell.

† HEBE, got by Rob Roy, dam by Sampson; g. d. Betty; gr. g. d. Old Betty.

Rob Roy, got by Young Denton, dam Brindle by Mr. Lee's imported bull.

Sampson, by son of Ossian, dam by Comet.

which I think I may value at $200. I have also twelve half bloods which I can dispose of at from $20 to $40 each under a year old, making an income of at least $400 on a capital of about $400, and that capital itself improved one half more in value. This is not mere paper profit, but substantial value that can be tested, and I am well satisfied that with a little enterprise, every county in the state would afford three or four establishments as profitable as mine, and of great public utility.

Pennsylvania now pays a large annual sum to Virginia, Kentucky, Ohio and New York, for the finer kinds of stock cattle. I am informed that we pay to New York alone not less than $150,000 annually for cattle; and owing to the circumstance that breeders of cattle in the western parts of New York have, for some years past, attended to the selection and improvement of their stock, it finds a ready market, and commands one-fourth more per hundred, than cattle raised in the interior of Pennsylvania. We have vast bodies of waste lands in this state, even in our mountainous districts, which are well adapted, as the lands in New York, for rearing neat cattle and sheep, and certainly have the advantage in climate. I am persuaded, nothing more is wanting to render us altogether independent of our more enterprising neighbours, than two or three years' attention to our breeds of stock.

Of all the different races of cattle to be found in Pennsylvania, none can compare with the Durham Short-horns in the essential qualities of good stock, early maturity, easy keep, &c.; and although it would be impossible for many individuals to obtain the full blood, yet I am confident that a few full blooded males in each county, would soon realize handsome profits to the enterprising owners, and in the course of a few years would perpetuate an improved stock to the exclusion of the miserable stunted race which now lumbers our farm yards.

This, sir, is a subject of no common importance, and if the great exertions and sacrifices you have made were properly seconded by the enterprise of our farmers, we should soon have reason to hail your introduction of this fine race into our state, as a most important era in our agricultural economy.

I shall from time to time trouble you with an account of my improvements in the article of stock, and shall be happy in receiving any occasional hints on the subject that you may deem useful.

I am, very respectfully,
Your obedient servant,
CHARLES A. BARNITZ.

JOHN HARE POWEL, ESQ.
Cor. Sec'y Penn. Ag. Soc.

On the "dairy and feeding" properties of Improved Short-horns, by Dr. Elmer.

Bridgeton, (N. J.) January 9th, 1827.

SIR,—It affords me much pleasure to be able to communicate to you the result of my labours to improve my stock, and the high opinion which I entertain of *the Improved Short-horns for the dairy and stall, confirmed by personal observation, and actual experience, with those in my possession.*

In making a selection of animals for the purpose of improving my stock, I commenced by purchasing of Col. Powel, in the year 1823, a cow of one-fourth blood—the next year one of three-fourths blood, and a full blooded male—since that, others of different degrees of blood, and *some* of pure blood, both male and female; thus gradually progressing from year to year through different grades of blood, until I have attained the *pure* stock.* In pursuing this course, I have observed *that the nearer I approached the pure blood, I found them to be more hardy, subsist on less, and keep in better condition on short pasture, than any of my other stock.* From them I

* JILT, got by Bishop, dam Lucinda by Young Denton; g. d. Star; gr. g. d. Milker.

KATE, got by Bishop, dam by Sampson; g. d. Betty; gr. g. d. Old Betty.

OSAGE, light roan, bull, calved in 1826, by Wye Comet, dam Virginia. (See the pedigrees of Virginia and Wye Comet.)

FLIRT, by Young Denton, dam Julia by Young Denton; g. d. an imported Devon cow.

have bred calves of the most promising appearance, and greatly excelling those of any other breed that I have seen.

I have at this time three half blood yearling steers which are remarkable for size and condition, very docile, and in their general appearance are superior to any other cattle in this part of the country. They grazed during the last season (from May until the middle of November) on high land pasture, and continued improving so fast as to attract the attention of many of the neighbouring farmers, notwithstanding the severity of the drought, and the great annoyance of the flies and moschettos which literally *swarmed* with us during the season. *In regard to their dairy properties, they are equal to those of any other breed.*

I am, with much esteem,

Yours, &c.

WILLIAM ELMER.

JOHN P. MILNOR,
Rec. Sec. Penn. Ag. Soc.

On the Excellence of Devon Cattle for the Yoke—On the superiority of Improved Short-horns for the dairy and shambles, and their vigour and fitness for labour. By a successful practical farmer of Connecticut.

Goshen, (Conn.) January 22d, 1827.

SIR,—I live in a section of the country where the dairy forms a very conspicuous part of the

income of the farmer, and where very considerable attention is paid to the raising of cattle of the finest description, and possessing the most valuable and useful qualities. I have been acquainted with a number of distinct breeds of cattle of English importation. I have been very intimately acquainted with *Devons* imported from Mr. Coke's stock in 1817, having myself procured and kept some of the best blood in the possession of Messrs. Patterson and Caton, of Baltimore, importers of the stock.

I have had considerable acquaintance with the Improved Durham Short-horned stock—have visited the farm of Mr. Powel, and viewed the stock in his possession, and by him imported—and do not hesitate to express my opinion decidedly in favour of that breed of cattle as possessing more valuable and intrinsic qualities than any other which have ever come under my observation.

For the yoke I do not consider them superior to Devons, and yet I see no reason why they are not very well calculated for the labour of the yoke, as they certainly possess good constitutions, are vigorous in their motions, and walk with speed and facility. But for the more common and useful purposes of fattening and the dairy, they far surpass any description of their species, combining great symmetry of form with superior size—rapid growth and an unusual apt-

ness to fatten. Such is my entire conviction of their great superiority and excellence, that I have procured a bull* from Mr. Powel's stock, with whose progress and improvement I am extremely well satisfied.

Very respectfully,
I remain yours, &c.
T. TOWNER.

To the Secretary of the Pennsylvania Agricultural Society.

Carpenter Hall, Lancaster, (Pennsylvania,)
January 22d, 1827.

DEAR SIR,—After a period of nearly five years in breeding Short-horned cattle, I venture to give my opinion, as far as my experience will allow.

The crosses between the Short-horns and our native cattle, and the continuation with the Short-horns until we get seven-eighths or fifteen sixteenths of the blood, all appear to be well adapted to our climate, and are remarkable for the thickness of their coats.† Most of the Short-

* WARWICK, calved in 1825, red roan (bred by Mr. Powel) got by Wye Comet, dam Belle, imported in 1824 (bred by Mr. Taylor); g. d. Lady (bred by Mr. Taylor); gr. g. d. by Comet.

Belle's calf *Beau*, took the first premium at the Pennsylvania Cattle Show of 1825, and also a premium at the Cattle Show of 1826.

[*See Wye Comet's pedigree.*

† Long and close hair is one of the characteristic marks of the Improved breed.

horn cows that I have seen have all the marks of deep milkers. One of my half blood cows by Denton, brought forth a calf in May last, and the calf for some weeks continued to suck but two teats, both on the same side of the udder, which was one-half the milk. From the remaining two teats, I saw drawn regularly every day two buckets of milk, containing about three gallons each. This cow got nothing but the grass, and grazed with my other cows.

The next thing to be considered is the fitness of these cattle for the shambles, of which I could not give an opinion without seeing some of them slaughtered, as it would be impossible to say how they would cut; but as it regards their aptitude to fatten, and their early maturity, I give it as my opinion, that they surpass every other breed of cattle that I have ever seen. My steers of three years old were perfectly fat last summer on the grass, and some rising two years were quite fat; they are much more easily wintered, and will feed much better on straw and rough food, than any other breed of cattle.

I am, &c.

Most sincerely yours,

H. A. CARPENTER.

JONATHAN ROBERTS, ESQ.

President of the Pennsylvania Agricultural Society.

Philadelphia County, May 31, 1827.

DEAR SIR,—My residence, as you know, adjoins Powelton. My intimacy with Mr. Powel, and the interest I take in his agricultural pursuits, particularly in the breeding of live stock, have made me familiar with the details of his farm, and the management of his cattle. I enclose various depositions taken by George C. Lentner, Esq., of Blockley, showing that an IMPROVED DURHAM SHORT-HORNED COW, called Belina, produced milk between Thursday morning the 24th inst. and Saturday evening the 26th, i. e. in three days, from which eight pounds thirteen ounces of butter were obtained *by the usual process, at the rate of 20½ pounds per week.*

This cow has had no other food than slop of Indian meal, clover and orchard grass, and has yielded repeatedly by measurement, and so far as can be ascertained by the bucket, continues to yield, twenty-six quarts within the twenty-four hours.

I carefully superintended the trial recorded, and *sufficiently know the parties who were employed in the operation, to believe their statements, independently of the ocular demonstration which I have had.*

I am, dear sir,
Most faithfully yours,
JOHN P. MILNOR,
Recording Secretary.

Philadelphia County, ss.

Personally appeared before me the subscriber, one of the Justices of the Peace, in and for the County aforesaid, Thomas Morrison, who being duly affirmed according to law, deposeth and saith—

That he has been employed as foldman at Powelton for nearly nine years; that he has milked the cow called Belina, since she was imported in 1825; that he has never seen nor heard of any extraordinary management, either of this or of any other cow, nor of the milk upon the Powelton farm; that all the milk given by Belina, from Thursday morning the 24th ult. until Saturday evening following, was drawn and kept separately; that no mistake could be made, as all the cows which were not dry, had been, and are yet, upon distant meadows, excepting Belina, and another, whose milk supplied her calf, a month old, running at her side, and the family, during the time mentioned, which milk was always sent immediately into town from the field.

Affirmed before me this first day of June, in the year of our Lord one thousand eight hundred and twenty-seven.

GEORGE C. LENTNER.

—

Philadelphia County, ss.

Personally appeared before me the subscriber, one of the Justices of the Peace, in and for the County aforesaid, Sarah Sterling, who being duly affirmed according to law, deposeth and saith:—

That she received from Thomas Morrison

Belina's milk from Thursday morning the 24th inst. until Saturday evening following; that it was merely strained and put into common milk pans in the Spring House, from which every drop of milk had been previously removed; that there could be no mistake, as the key of the Spring house door was kept by her, and no person was allowed to enter, excepting with her; that several persons on the farm daily counted the milk pans, and noticed all that was done.

Affirmed before me this thirty-first day of May, in the year of our Lord, one thousand eight hundred and twenty-seven.

GEORGE C. LENTNER.

Philadelphia County, ss.

Personally appeared before me the subscriber, one of the Justices of the Peace, in and for the County aforesaid, Maria Sturgis, who being duly affirmed according to law, deposeth and saith:—

That on Monday night the 28th inst. she skimmed the milk which Sarah Sterling had received from Thomas Morrison between Thursday morning and Saturday evening immediately preceding; that she churned it the next day (Tuesday) and obtained *eight pounds and thirteen ounces of butter, which was weighed by Mr. Milnor in her presence.*

She further saith that she measured, on Wednesday the 30th inst., a quart of cream taken from Belina's milk, that she churned it, and obtained one pound five ounces and a quarter of an ounce of butter, which was also weighed by Mr. Milnor in her presence.

Affirmed before me this thirty-first day of

May, in the year of our Lord, one thousand eight hundred and twenty-seven.

GEORGE C. LENTNER.

Extract from the Minutes of the PHILADELPHIA SOCIETY FOR PROMOTING AGRICULTURE, *May* 15, 1827.

John Hare Powel having presented some cream, accompanied by the following statement, R. Haines, Esq., was appointed by the Chairman to ascertain, by a stop-watch, the time necessary to convert it into butter. Whereupon he reported that it required three seconds, which was received unanimously, as the members witnessed the fact.

R. Haines stated that he had questioned the servants, and was satisfied that no preparation had been required.

The cream was produced from an Improved Durham Short-horned cow, bred by J. Whitaker, Esq., of Burley, England, and now in the possession of John Hare Powel, Esq.

W. S. WARDER, *Secretary.*

Philadelphia, 5mo. 31, 1827.

"This cream was skimmed by me on Sunday morning, from milk which was taken from the cow on Saturday evening. It had stood from eight o'clock until seven the next morning. Nothing was done to it but as common. I strained it with the milk used for the family, and placed it in a common milk pan in the vault.

"ELIZA TAUSIAS."

Extraordinary Cream of an Improved Short-horned Cow.

From Wilson Jewell, M.D.

West Philadelphia, June 11, 1827.

JOHN P. MILNOR, Esq.

Dear Sir—It affords me pleasure to answer your polite note, dated the 8th inst., and I do not hesitate to add my testimony for the correctness of the statement published a few days since, in reference to the Improved Short-horned Durham Cow, owned by J. H. Powel, Esq.

Attracted by an account of so extraordinary and novel a nature, I visited Powelton, in company with two of my friends, and had the gratification of converting cream into butter in less time than two minutes,* in a teacup, aided by a spoon. The cream was of the consistence of curd, and the quantity of milk shown, being the morning's production from one cow, as far as I was competent to judge, appeared little short of fourteen quarts, far exceeding my most sanguine expectations, both as regards richness and quantity. Very respectfully, your friend,

WILSON JEWELL.

From the Rev. Joseph H. Kennard.

Hamiltonville, June 16, 1827.

JOHN P. MILNOR, Esq.

Respected Sir—My visit to Powelton, in company with Dr. Jewell and Rev. D. Jones, was short but very gratifying; every thing we beheld gave us the impression, that the proprietor was judicious in his plans and persevering in their accomplishment.

With regard to my convictions of the truth of what has been published in relation to the extra-

* It required, on this occasion, a longer time than usual, as the cream was very fresh.

ordinary cow, I am free to say, that from all I saw, and from the statement of Mrs. Sturgis, the account published in the Saturday Evening Post, of the 9th inst., appears to be a correct statement of facts.

And further, it appears of the greatest importance to the interests of our farmers, that the Improved Durham Short-horned breed of Cows be extensively propagated.

Cordially wishing Col. Powel success in his laudable efforts, I am Sir, very respectfully, yours,

JOSEPH H. KINNARD.

On the Saccharum of the Sweet Potato (Convolvulus battatas).

BY ROBERT HARE, M. D.

Professor of Chemistry in the University of Pennsylvania.

Dr. Tidyman, of South Carolina, lately supplied me with some sweet potatoes, of a kind in which sweet matter is peculiarly abundant, and requested that I would ascertain if there were any sugar in them. Having pared, and by means of the instrument used for slicing cabbages or cucumbers, reduced them to very thin slices; about a pound was boiled in alcohol of the specific gravity of .845, which appeared to extract all the sweetness, yet on cooling yielded no crystals of sugar. The solution being subjected to distillation, till the alcohol was removed, an uncrystallizable syrup remained. In like manner, when aqueous infusions of the potatoes were concentrated, by boiling or evapo-

ration, the residual sirup was uncrystallizable. It appears therefore that the sweet matter of this vegetable is analogous to molasses, or the saccharum of malt.

Its resemblance to the latter was so remarkable, that I was led to boil a wort, made from the potatoes, of proper spissitude, say s. g. 1060, with a due quantity of hops, about two hours.

It was then cooled to about 65 degrees, and yest was added. As far as I could judge, the phenomena of the fermentation, and the resulting liquor, were precisely the same as if malt had been used. The wort was kept in a warm place until the temperature 85 F. and the fall of the head showed the attenuation to be sufficient.* Yest subsequently rose, which was removed by a spoon. By refrigeration a further quantity of yest precipitated, from which the liquor being decanted became tolerably fine, for new beer, and in flavour, exactly like ale made from malt.

I have computed that five bushels, of potatoes, would produce as much wort as three bushels of malt; but I suppose that the residue would, as food for cattle, be worth half as much as the potatoes employed.

I believe it possible to make as good liquor from malt in this country, as in England, but that in our climate much more vigilance is required to have it invariably good, principally because the great and sudden changes of temperature, render malting much more precarious. Should the saccharum of the sweet potato, prove to be a competent substitute for that of germinated

* In passing to this state, there should be a loss in gravity of about 4 per cent.

grain, the quality will probably be less variable, since its development requires but little skill and vigilance.

Besides, as it exists naturally in the plant, it may be had where it would be almost impossible to make, or procure malt. Hops, the other material for beer, require only picking and drying to perfect them for use.

They are indigenous in the United States, and may no doubt be raised in any part of our territory.

I have dried in my evaporating oven, some of the sweet potatoes in slices. It seems to me that in this state they will keep a long while, and may be useful in making leaven for bread. They may take the place of the malt necessary in a certain proportion, to render distiller's wash fermentable. The yest yielded by the potato beer, appeared in odour and flavour, to resemble that from malt beer surprisingly, and the quantity, in proportion, was as great. In raising bread it was found equally efficacious.

I propose the word suavin, from the Latin suavis, sweet, to distinguish the sirup of the sweet potato. The same word might, perhaps, be advantageously applied as a generic appellation to molasses, and the uncrystallizable sugar of grapes, of honey, and of malt.

Crystallizable sugar might be termed saccharin, since the terminating syllable of saccharum is appropriated in chemistry to metals.

JOHN HARE POWEL, ESQ.

Cor. Sec'ry of the Pennsylvania Agricultural Society.

American Proofs of Dairy Properties.

Philadelphia, 3d Mo. 1, 1826.

ESTEEMED FRIEND,

I thank thee for the pitcher of cream, the product of one* of thy *Short-horned Cows.* No stronger proof of the value of that family of animals for the dairy, need be furnished, than the specimen before me. A portion of the cream was subjected to friction, by means of a spoon and plate, and it yielded butter of fine flavour, in rather more than a minute. I could scarcely credit, what my own hand had effected. The farmers of our country will surely adopt this profitable race of stock, for the introduction of which into Pennsylvania, they, as well as our fellow citizens generally, are indebted to thy practical judgment, and disinterested zeal.

With great regard and respect,

I am, &c.

ROBERTS VAUX.

JOHN HARE POWEL, ESQ.

From Dr. Harris, Vice President of the Pennsylvania Agricultural Society.

Chester County, April 2, 1826.

JONATHAN ROBERTS, ESQ.

President of the Pennsylvania Agricultural Society.

DEAR SIR,—The interest you take in all matters connected with the improvement of farm

* It was from three cows.

stock, makes it unnecessary for me to apologise for giving a detail of an experiment to test the richness of cream afforded by Mr. Powel's Improved Short-horn Cows.

The cream was evidently fresh, and was stated to have been taken from milk twenty-four hours old. It was converted into butter in my presence, in a quarter of a minute, whilst I held the watch in my hand, although it had been skimmed but half an hour.

I have interrogated the person by whom it had been skimmed, and under whose inspection the milk had been deposited.

I am satisfied from her statement, and that of the person on the farm, that no extraordinary care, nor management, nor food, have been employed to produce such result.

Very truly, yours,

WM. HARRIS.

Letter to the Editor of the New England Farmer.

My residence adjoins Powelton. I visit it almost daily. I have during nearly five years been in the habit of inspecting the stock. I am familiar with all the arrangements of the farm, and have in the present instance, interrogated the foldman. The cream to which Mr. Vaux adverts was produced by three cows—one

of them Belina, noted in the certificate of the keeper of the Herd Book to have given daily 32 quarts in England—another, the second best milker on the farm, none of them having been fed at any time in an extraordinary way. Belina has a large fat male calf, produced in February, constantly at her side, and which, at this time* cannot take all the milk, although the pasturage is so bare from the excessive drought, that two Maryland farmers yesterday observed it was like that of Cecil county. They have no other food than that which it affords.

Similar experiments to that made by Mr. Vaux, were made by myself, Dr. Harris, and several others. From Mr. Vaux most probably, not having been directed as to the mode of applying the friction, the butter was not obtained so rapidly, as in other instances. I saw it produced in less than ten seconds. The cows had been fed upon bran, what is generally called shorts at the Pennsylvania mills, (with twenty double bushels of which, two bushels of corn meal had been mixed), small portions of mangel wurtzel, and orchard grass† hay. The milk was drawn night and morning, simply deposited in pans, in a deep cold cellar, having been subjected to no other treatment than that of straining and skimming. It may be proper to observe that Mr. Powel jocosely remarked he did not flatter

* May 23d. † Cocks-foot.

himself, that this cream if amalgamated in a churn with the cream of other cows, would, like the Alderney cream, come first,* nor would he imply that all Short-horn cows are good milkers, nor that such EXTRAORDINARY properties are often to be found in the best tribes of the Improved Short-horns, but that they are better fitted for the general purposes of the country, than any race with which he is acquainted, and that certain FAMILIES of *Improved Short-horns* are deep milkers.

He further remarked that it was not the value of a wool bearing, nor butter yielding brute, but the "SOUNDNESS OF HIS OPINIONS," he was anxious to establish, and that he firmly believes that there are various "native cattle," as they are called, of excellent properties, with which, (as

* *Extract of a Letter from Reuben Haines, Esq. of Germantown.*—"I have long been of the opinion, that in England particularly, the great breeding country, whence we derive our finest stock, too much attention was paid, and vast sums expended, in the vain endeavour to procure a race that shall excel in all the three great points of "the pail, the yoke, and the knife," as they are technically termed; and whilst other gentlemen were selecting the finest forms to feast the eye, and a carcass, which if well fed, would grow to an enormous size, I wanted a small animal, whose carcass was too valuable for beef,† that would subsist on a small quantity of food, bear the heat and drought of our summer and autumn, and produce the greatest quantity of rich and delicious butter, in proportion to the food consumed. * * * One remarkable property of the cream of the Alderney cow is, the readiness with which it is converted into butter. The week in which we kept it separate, "it came," as the phrase is, in five minutes; and in churning it, mixed with the cream of other cows, we usually have had the Alderney butter come first,‡ be taken out of the churn, and the operation continued half an hour or more before a second gathering of butter has taken place."—*Mem. Penn. Ag. Soc. pp.* 20, 22.

† If the carcass be too valuable for beef, how is it to be used?

‡ By what means could this be ascertained?—ED.

I know,) he has made great efforts, and at no small expense, to have crosses by means of improved bulls.

JOHN P. MILNOR,
Rec. Sec. Penn. Ag. Soc.

Extract of a Letter from Colonel Lloyd.

Talbot County, (Maryland,) Wye House, May 8, 1825.

MY DEAR SIR,—Many of my half bred Champion heifers,* (now two years old,) have had calves this spring, and, contrary to my expectation, are 50 per cent. superior for milk to any breed I have ever had. They have had only the fare of the common cattle on my estate. All of the mixed blood are so much superior to my common stock, that I consider myself well paid for my purchase,† by the mixed blood alone which I have reared. My half blood young bull *which you admired*, is now a noble animal.

I have given my mixed Devons a fair trial with my mixed Short-horns, and it would be only necessary for the most prejudiced or sceptical to see them to decide in favour of the Short-horns. In size and form there is no comparison, and the Short-horns are vastly superior for milk.

Yours, truly,

EDWARD LLOYD.

JOHN HARE POWEL, ESQ.

* Champion, an improved Durham Short-horn bull.

† Col. Lloyd paid $1500 for three improved Short-horns, two years old.

Bucks County, February 2, 1835.

DEAR SIR,—It is now about three months since I purchased of you a cow and bull calf, since when, I have given great attention to them, in order to ascertain their value as compared with the common cattle of the country, and have come to the following conclusion:

The cow, considering her age, (3 years) and the food to which, at this season, she is necessarily restricted, is a deep milker—the most so of any animal in my possession—a small consumer, and easily kept fat, (surprisingly so, taking into view the quantity of milk yielded,) and is perfectly gentle and docile in her disposition.

The bull, without any extraordinary keep, is much larger than calves of his age, and in his form and appearance more resembles a grown steer than calves of his age (7 months). He keeps very fat upon a moderate allowance, and like the cow, is extremely docile. I feel perfectly satisfied that the Improved Short-horns will keep in fine order upon the same quantity of food which, when given to animals of three-fourths their weight, will not be found sufficient to produce the same effect. This I state from actual experiment, and consider the observation perfectly just, as applied not only to my own animals, but to the breed generally.

My improved stock have been viewed by a number of my neighbours, and have been uniformly admired, and as you know, from my experience of their valuable properties, I have been induced to increase the number by additional purchases from among your very extraordinary stock.

JOHN HARE POWEL, ESQ.
Cor. Sec'y Penn. Ag. Soc.

Extract of a letter from Henry A. Carpenter, Esq., an extensive practical farmer, in one of the most fertile, and best cultivated parts of Pennsylvania, to the Corresponding Secretary of the Pennsylvania Agricultural Society.

Lancaster County, June 14, 1823.

DEAR SIR,

The two half blood heifers by the Short-horn bull Denton, which you stated had calved last July, produced through the course of last winter, butter of a *better quality*, than any I ever saw made in the month of May, and it was always obtained in about ten minutes churning. One of these heifers produced a calf the beginning of June; the other (the three year old,) has supplied nine labouring men all spring with a sufficiency of milk, and butter once a day; which production exceeded that of *a fresh milch cow*

of the common stock, which *I had selected with great care, and proved to be as good a milker as the neighbourhood could produce.* I am sorry that I cannot give you an account of the production of butter from the imported cow Moss Rose, in a given time, as her calf had got so old before the trial was made, that it would not take to other cows; but I do not hesitate to give it as my opinion, *that twelve or fifteen pounds of butter* of the finest quality, can be made from her in one week, as she possesses the power of secreting rich milk, in a greater degree than any animal I have ever seen. I expect that this is enough to satisfy you, that as milkers, the Durham Short-horns are not to be surpassed. The bulls are docile and quick feeders.

From Mr. Joseph Kersey.

Chester County, 2d Month 12th, 1825.

I purchased an half bred improved Durham Short-horn bull, which I sold at public vendue for one hundred dollars, and I am happy to learn that he has had, during the last season, near one hundred cows. His docility, his aptitude to fatten upon little provender, are admirable. I raised two of his calves, which, when four weeks old, were generally supposed to be two months old, from their being so remarkably fleshy and well grown, although they had not

received any thing but the milk from their dams. Robert Clemmens raised one from a cow that would not weigh more than three hundred pounds. He killed the calf at six months old, the meat of which weighed three hundred and thirty-four pounds, for which he obtained ten cents per pound.

There was a cow exhibited at the Paoli; her calf was, at that time, one year and three days old, and had been kept from her for one night, and the next morning I milked from her at least two gallons of beautiful rich milk, and owing to her not being accustomed to being milked, it was impossible to get it all from her.

Taking this breed in every point of view, I consider them better adapted to the use of farmers than any other breed I am acquainted with. They arrive at maturity early, feed quick, are good milkers, and are exceedingly kind and docile; they have more weight in the most important points, viz: the standing ribs, the sirloin, the rump, &c., and have much less offal than cattle in common. Take one of this breed, and another of the common kind, of equal weight; slaughter them and sell them at the different prices the different pieces command in the market, and it will be found that the Short-horn will return considerably the most money, merely be-

cause it has more of the high priced pieces, and less offal.

I am, very truly, thy friend,

JOSEPH KERSEY.

JOHN P. MILNOR,
Rec. Sec'y Penn. Ag. Soc.

From David Comfort, of Philadelphia County.

RESPECTED FRIEND,—I have this morning seen the cow to which Joseph Kersey alludes in the foregoing letter. She has all the appearance of a deep milker. Her calf has been running at her side, I am assured, from its birth; it appears healthy and of good size; it sucked, I am assured, last night and this morning. The cow was also milked last night. She yielded this morning, in my presence, in addition to the consumption of the calf, a quantity of rich milk which I suppose to be equal to about eight quarts. My business is that of a practical farmer. I have therefore purchased her calf of the last year, at a large price, with a view of raising and improving *dairy cattle*. I think the other cows on the farm of the improved breed, have also the appearance of deep milkers.

DAVID COMFORT.

JOHN P. MILNOR,
Rec. Sec'y Penn. Ag. Soc.

Half Breeds at six times the price of common Stock.

Washington, (Pa.) December 3d, 1825.

JOHN HARE POWEL, ESQ.

Corresponding Secretary of the Pennsylvania Agricultural Society.

DEAR SIR,

I have seldom paid $200 in a manner more to my satisfaction, than that paid for the young bull.* The object I had in purchasing was the improvement of my own stock. I am now perfectly satisfied that this will be accomplished equal to my most sanguine expectations; and I have the additional gratification of seeing my neighbours' stock also rapidly improving. You will probably recollect, that at the time I purchased, I attributed the fine appearance of your stock in some degree to *extraordinary keep.* The little experience I have had is calculated to do away this impression. I have sold every calf I could spare, to experienced farmers, from six to eight times the price of common calves; and reserved the best. Several of my next spring calves are already bespoke. Nonsuch took the highest premium at our exhibition of 1824—at our last show I entered all my stock for exhibition only, and not for premiums. The committee on cattle reported Nonsuch the finest animal they had seen. They noticed his calves in the same handsome manner. There were 12 of them on the ground. I herewith send you the printed report. * * * * No fact appears

* Nonsuch, a half bred Short-horn bull, by Denton.

to me more obvious than that the best possible mode that could be devised to call the attention of our farmers to the improvement of our native stock, is to exhibit amongst them the best specimens of what has been done in other countries. The estimation in which the "Improved Short-horns" are held by the practical men in England, without taking into view our own experience, ought at least to procure for them some indulgence until they have a fair trial. I am so thoroughly satisfied of their excellence, that I do not mean to stop until I have some of the pure blood. I forgot to tell you in its proper place, that my yearlings are easily kept in good order, and excel in those points that indicate deep milkers.

I am sincerely yours,

ALEXANDER REED.

Extract of a Letter from E. Wolcott, Esq., a skilful practical farmer.

East Windsor, Conn., June 17, 1825.

In January last, I journeyed to Vermont, and saw the descendants of the Holstein (Short Horns,) cattle, imported by Wm. Jarvis, Esq., about fourteen years ago. Satisfied of the excellence of this stock, I purchased of Mr. Jarvis a few heifers. In March, I travelled into Massachusetts, and saw the imported bulls Denton,

Cœlebs, and Admiral, of the Improved Durham Short-horn breed, and many of their progeny. Recently I have seen more of the same breed in your possession, and in Baltimore; and should think no lover of fine cattle could see them, without acknowledging their excellence.—How fully I am persuaded of their superiority over any other breed of neat cattle, you may well know by the price I paid for a young male of pure blood.

With sentiments of much respect and esteem, I am, sir, your most obedient humble servant,

E. WOLCOTT.

JOHN HARE POWEL, ESQ.
Cor. Sec'y Penn. Ag. Soc.

Passyunk, Philadelphia County,
January 27th, 1825.

SIR,—In answer to your inquiries, I state that my father and myself keep generally one hundred milch cows. He has usually fed, annually, from four hundred to six hundred head of cattle; my business is exclusively that of a grazier and dairy farmer. I have had in my possession cows of various breeds, imported into Pennsylvania, and have seen some of the best milch cows purchased by order, in New England and New York State. In addition to my other employments, my business as superintendent of the District of Meadow at Schuylkill Point, leads me

constantly among the cattle grazed upon it. I have no hesitation in declaring, after a minute examination of the Improved Durham Short-horn cows at Powelton, that I have never seen any animals which I would prefer, as dairy stock. The position and shape of their udders, their thin necks and very small bone, together with their whole form, give as much appearance for milk, as any thing I have ever seen. I have often sold cows from sixty to eighty dollars, of the best breeds, which could be found before the late importations of Short-horns.

WILLIAM BRADLEY.

JOHN P. MILNOR,
Rec. Sec. Penn. Ag. Soc.

Extract from the Report of the Committee on Neat Cattle, at the Cattle Show at Worcester, Massachusetts, in 1825.

Governor Lincoln offered for exhibition three half Denton* cows, all of excellent quality, but one of them particularly noticed as an extraordinary animal of her kind. She has often given from 24 to 27 quarts of milk per day, of excellent quality, yielding a large proportion of cream. The least quantity of milk given by her in any one day during the summer drought, on grass feed only, was 18 quarts! The committee considered her THE MOST VALUABLE MILCH COW EVER EXHIBITED IN THE COMMONWEALTH.

* Denton, Mr. Williams' Improved Short-horned Bull.

Sheep—Merino—On the necessity of attending to Yolk—The characteristic marks and peculiarities of the best varieties.

By James Caldwell, Esq.

Philadelphia, October 2d, 1826.

My Dear Sir,—To the queries which you have done me the honour to address to me, I have no hesitation in answering *generally* in the affirmative, viz. I have generally found the finest fleeces to contain the most yolk. Yet I have known exceptions to this general rule, in sheep that appeared to have a peculiar secretion, and concretion of the yolk; those exceptions, however, have been so rare, as to establish in my opinion the correctness of the general rule.

It is also, in my opinion, a characteristic of the Merino fleece to have an abundance of yolk.

* * * * * * *

I have no hesitation in saying, that all who have paid attention to the subject, must be aware of the fact, that an individual of an ordinary breed might accidentally be endowed with qualities superior to the generality of its race. A horse, for instance, might possess uncommon speed, but it would be imprudent to *breed* from such an animal for the purposes of the course, without the corroboration of *marks*, which good judges could not mistake, to ascertain with precision the stock to which it belonged.

* * * * * * *

I beg leave to present to you an engraving of one of my ewes, which, in my opinion, has all the characteristics of the best variety of the Merino.

It must be perfectly well known to you, that *many varieties* of the Merino were imported from Spain. I have examined most of these importations, and found none equal in value, in my estimation, to the variety, of which this engraving shows the characteristic marks.

I would not have exchanged that ewe for the best Saxon Merino I have ever examined. You will observe *that the head is covered with wool down to the nostril.* Bare heads are apt to be accompanied by bare bellies and light fleeces.

* * * * * * *

With the greatest regard and respect,
Your obedient servant,
JAMES CALDWELL.

JOHN HARE POWEL, ESQ.
Corres. Sec'ry of the Penn. Agricul. Society.

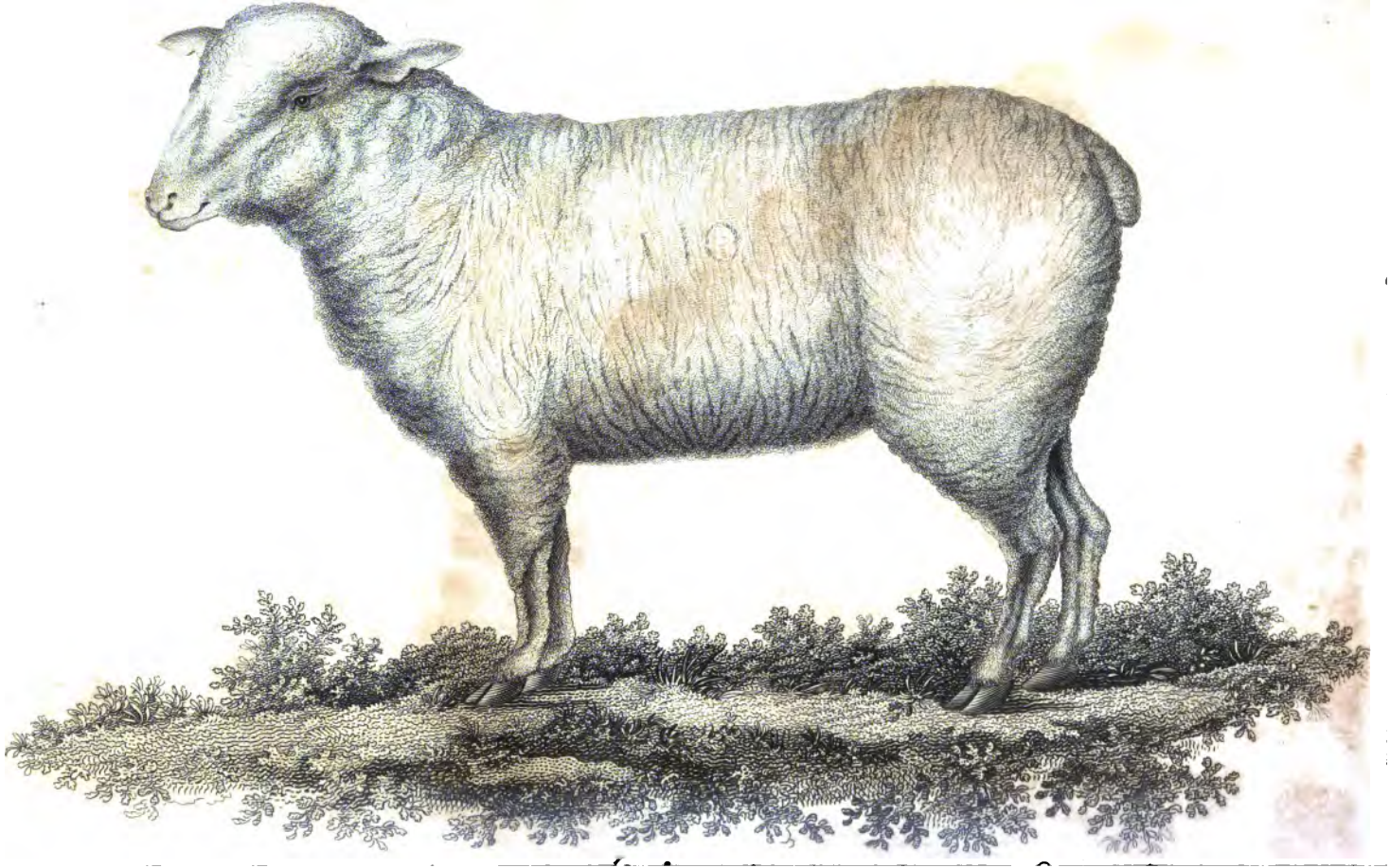
Extracts from Dr. Parry's Essay on the Nature, Produce, Origin, and Extension of the Merino breed of Sheep.

"In the year 1765, Augustus Frederick, Elector of Saxony, introduced into his dominions from Spain 100 rams and 200 ewes, chosen from the most noted flocks. Part of these were established at the Electoral farm at Stolpen, on the frontiers of Bohemia, six leagues from Dresden. Three other secondary sheep farms were instituted, at Rennersdorf, Lohm, and Hohenstein, in order chiefly to improve the native breeds by the Spanish cross. At the end of ten years, these establishments were found to have had all possible success. The sheep of the pure blood had preserved every valuable quality, and the ultimate crosses had wool fully equal in fineness and beauty, to that of the pure Merinoes." * * * * * * * * *

"According to Lasteyrie, the pure Merinoes belonging to the Elector, amounted in 1802, to 3400." * * * * * * *

"The sheep of these flocks are larger or smaller, and yield more or less wool, according to the nourishment which is given them, and the mode in which they are treated. On the whole, they are smaller and less productive, than the original ones in Spain." * * * * *

"The winter food of the Saxon Merinoes consists of hay, lattermath, clover, oat or rye straw, haulm of peas, vetches, lentils, &c. which are distributed twice or thrice a day, according to their quality. Some cultivators give oil cake, and bran or corn bruised, or ground into meal. They mix these articles in a tub with the water which they give the sheep to drink, and afterwards divide among them the more substantial sediment. This mixture, which they find singularly beneficial to the lambs, should be made with hot water; and seven or eight pounds of cake or meal are divided among 100 sheep."



be produced at least cost.





SHEEP.

On various breeds—Teeswater—Dishley—and Southdown—their Characteristics—Form—Flesh—and Fleece. On early Maturity—Its Importance—Value not determined by great Size.

By John Hare Powel, Esq.

Powelton, Feb. 20, 1827.

In a communication which I had the honour to present to the society, I remarked—The Teeswater sheep are the largest in Europe—are slow feeders—tallow well within—carry more flesh, and less fat without; but produce much worse mutton, and much coarser offal, than the Dishley breed. Their fleeces are heavy, and afford, in common with the Dishley, what is called combing wool, fitted for the manufacture of camlets, and various articles of worsted. The Southdown sheep are much smaller than the Dishley—they are more hardy—their wool is short, equal in quality to that of half-bred Merino—their fleeces are not so heavy—they carry more fat within, and much more flesh without, than either the Dishley, Tunisian, Irish, or Teeswater sheep. By their activity and vigour, both of muscle and constitution, they are fitted to encounter every difficulty, as well as to endure the extremes of heat and cold. They occupy, in England, one of the most exposed and least fertile portions of the island—their mutton is of the finest kind, and commands the highest price, although from the properties of the sheep it can be produced at least cost.

There is no mistake more prevalent, and none more egregious, than that which ascribes excellence *to great size.* Unless it be had early, and at comparatively small expense, large size does not more determine the extent of usefulness in the quadruped, than in the man. Weight is not always ascertained by size—It is affected more by compactness and squareness in certain parts, with rotundity of the barrel, than by mere extension of the frame. If the hind quarters be *long*, *deep*, and *wide*—the shoulders be *placed well back*—the *breast be ample*—the brisket be protruded—the back be broad—*the loins wide—the girth behind the fore legs and over the chine, be large*, the animal must possess not merely the frame which weighs most, but the form which carries most weight in the valuable parts, and affording sufficient room for the action of the lungs; without which, health and thrift can be seldom found.

Some animals have good forms, but are "*shelly*," as it is technically termed, conveying the idea of the absence of the due quantity of flesh. Some breeds produce too much fat, in proportion to flesh: those which carry comparatively a large quantity of flesh, 'marbled when ripe,' with the propensity to become fat at an early age, and in the shortest time, are those best fitted for grazing purposes. These remarks apply to neat cattle as well as to sheep. It is evident that the product, whether in beef, mutton, butter, cheese, or milk, must be estimated by the *quantity of food*, before the result can be had. Early maturity not only saves food, but spares capital and gains time. The quantity and quality of the wool is a matter of serious importance, when the

value of sheep is to be determined. I do not mean by quality, the fineness of the fibre alone, nor do I mean to confine the remark to sheep whose wool is of the finer sort. The filaments of combing wool should part readily—those of fine wool should be *soft and elastic*, as if it had been frizzled. The mere fineness of the fibre, or length of the staple, is not the only test of excellence: a diseased, or half starved sheep, produces fine wool, but not an elastic, nor useful material.

The sheep which produce the finest fleeces, are not *necessarily* the best to form a *breeding flock*. If their constitutions be not good—if *their forms* be bad, the secretion of yolk, which is essential for the support of the fleece, must be small; the offspring, consequently, will be a degenerate race. Thus, in selecting merinoes, regard should be given to their forms, even in those parts of the country where the demand for the carcass is so small, as to make mutton of little value.

It has been objected that the mutton of South-down sheep may be good—that its excellence, if it exist, must be ascribed to their extensive ranges of pasturage—that the ewes when four or five years old are almost invariably destitute of wool on their bellies—that they afford at that age about 1½ pounds, that the wethers afford 2 to 2½ pounds of wool—that they can be found in almost every flock of common sheep throughout a considerable portion of Pennsylvania and New Jersey—that their wool is not very visibly finer, and that their mutton from the same pasturage is not known to be better than that of common sheep.

The following notices will determine how far

the assertions as to the hardiness of the animal—the excellence of the flesh—the quantity and quality of the wool are established by the opinions of manufacturers, woolstaplers, graziers, and men of *taste*.

I have the honour to be, &c.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

Southdown Sheep—On their Properties—Hardiness—Tendency to become fat—On their Fleeces, close, heavy, and sufficiently fine for General Purposes—On their Flesh—Its delicacy—Flavour, and superiority to all other Mutton.

BY WILLIAM PHILLIPS, ESQ.

Philadelphia, February 12th, 1827.

DEAR SIR,—Agreeably to your request, I give you my opinion of the Southdown sheep, exhibited to a committee of the Philadelphia Agricultural Society, of which I was a member. Although the fleece in fineness is not equal to Merino, yet I ascertained from dealers that a SMALL PART OF THE FLEECE WOULD MAKE GOOD BROADCLOTH, AND THE REMAINDER IS IN HIGH ESTIMATION FOR INFERIOR FABRICS. Considering all their estimable properties, I am of opinion that such Southdown sheep as you exhibited, are as valuable a stock, if not more so, than any other that have been kept in this country.

THE FLEECE IS CLOSE, HEAVY, AND SUFFICIENTLY FINE FOR GENERAL PURPOSES, AND A SMALL PART FINE ENOUGH FOR ANY PURPOSE to which wool is likely to be applied for many years to come.

To the excellence of the Southdown mutton, I can with pleasure testify, as well as several gentlemen whose judgment of the luxuries of the table, will not be doubted by those who know them—They were so well pleased with it, that they cordially gave the annexed certificate of their opinion of the saddle of an imported wether, which was a present to Mr. David Lewis, who kept it upon his farm, ON COMMON PASTURE, without GRAIN OR ANY PARTICULAR ATTENTION, and it was the finest saddle of mutton, in appearance, delicacy, and flavour, I ever saw or tasted. It was greatly admired by many others. Their thriving properties, and tendency to become fat, are very important recommendations.

I remain, with much esteem,
Yours,
WILLIAM PHILLIPS.

JOHN HARE POWEL, ESQ.

We the subscribers having partaken of a saddle of mutton from Mr. David Lewis' farm, of the Southdown breed, the qualities of which are not generally known here, are of opinion that it is much superior in delicacy and flavour to any other mutton we have eaten.

WILLIAM PHILLIPS,
JOHN CLEMENTS STOCKER,
JOHN SMITH,
LAWRENCE LEWIS,
J. K. WUCHERER,
L. CLAPIER,
ANTHONY STOCKER,
ROBERT TOLAND.

Philadelphia, February 12, 1827.

Southdown Sheep—On their Fleeces, Carcasses, and fine Points.

By James Sykes, Esq.

(An extensive manufacturer of Maryland.)

Baltimore, October, 1826.

Dear Sir,—In reply to your inquiries upon the subject of Southdown sheep, I take leave to state, that I carefully examined the Southdown sheep exhibited by Colonel Lloyd at the late Maryland cattle show, and have samples of wool, fairly taken from them, together with samples from Merino sheep, exhibited at the same time. I have no hesitation in giving, as my opinion, that the Southdown wool is equal in quality to the wool of the Merino sheep, shown upon that occasion (with the exception of the sheep exhibited by Wm. Patterson, Wm. R. Dickinson, Esquires, and General Mason) but, I would here remark, that I considered none of the sheep exhibited (except those owned by the aforementioned gentleman) full blood Merinoes, judging from the fleece.

I believe the Southdown wool shown me at Powelton, and the wool upon the Southdown sheep of Col. Lloyd, equal in quality to the general average of three-fourths blood Merino of this country, and superior to much wool offered for sale, as full blood Merino.

I consider the Southdown wool to be best adapted to the sattinett manufacture, the fleece being generally a close, short pile.

I think the Southdowns at Powelton possessed of remarkably good carcasses and fine points, and especially the ram last imported by you, which, in those respects, I think superior to any sheep I have ever seen.

I esteem the Southdowns a valuable race, taking into consideration both carcass and fleece, and, were I to engage in sheep husbandry upon the sea-board, where mutton is an object, should prefer them to any other kind I have yet seen; on the other hand, were I to keep sheep in the interior, where fleece would be my object, I should prefer the finest woolled Merino or Saxon, and would make my commencement from the flocks of Wm. R. Dickinson, Esq. of Ohio, as I am now of opinion he has sheep equal, if not superior, to the general race of Saxon sheep lately imported.

I am, with great respect,
Your obedient servant,
JAMES SYKES.

Southdown Sheep—Mr. Powel's Inquiries, addressed to Mr. Aaron Clement, one of the most successful breeders in the United States.

DEAR SIR,—You have bred sheep for many years—have travelled in various states—have manifested great zeal for the improvement of live stock—have been rewarded by the highest prices, and highest premiums for sheep of the mixed Dishley, Teeswater and Southdown race, and have aided me in procuring the very best animals of that variety. I thus rely especially upon your judgment and ask your replies* to the following questions.

JOHN HARE POWEL.

MR. AARON CLEMENT.

* Mr. Clement's replies and the subsequent certificates are adduced in refutation of the assertion, that Southdown sheep can be found in the common flocks of Pennsylvania, &c.

Southdown Sheep—On their Characteristics—their Forms, Points, Properties, and Vigour—On the quality and close staple of their Fleeces.

BY MR. AARON CLEMENT.

Have you ever seen such sheep as my imported Southdown sheep?

Ans. I have seen sheep, whose faces and legs have some resemblance to yours, but entirely different in form, yours being decidedly superior.

Do you think sheep so peculiar in form and appearance, could exist in Pennsylvania or New Jersey, without your having seen them?

Ans. I have never known any of the pure Southdowns to be in existence, in either of the above named states, with the exception of those said to have been imported by Captain Beanes into New Jersey, and they have been crossed with other breeds until they bear but little resemblance to the original stock.

Have these Southdown sheep close fleeces, covering well their bellies with wool of fine quality?

Ans. Your Southdowns are clothed with wool of fine quality, and close staple, their bellies well covered.

Have they good forms, with the appearance of vigour and hardiness.

Ans. Their form I think superior to most sheep that I have seen. They appear to be vigorous and hardy.

Have they wide chests, wide loins, heavy hind quarters, long frames, exhibiting a good carcass for a grazier?

Ans. They possess the above named fine points in a very eminent degree.

Very respectfully, yours,
AARON CLEMENT.

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THE

Art of Breeding.

On the adaptation of particular Breeds to the food, climate, and face of the country in which they are reared —The necessity of breeding in, to fix Varieties, or to establish Improved Breeds—The injurious effects of breeding in-and-in TOO CLOSELY.

By John Hare Powel, Esq.

Powelton, October 5, 1826.

Dear Sir,—I have never considered any race of sheep fitted for all the climates, soils, and objects of our vast territory;* and I have endeavoured to show, that "particular breeds have been for ages retained in certain parts of Europe, where the shape of the animal has been made conformable to the purposes, to the climate, to the food, and face of the country upon which it has been reared. On the mountains of Scotland and Wales, on the bare chalk hills of the southern and western parts of England, races of sheep have always been bred, which, by the lightness of their carcasses, and the activity of their muscles, are enabled to find sustenance, and by the closeness of their fleeces, are fitted to endure the exposure, which, in mountainous regions, must always be met. In the rich vales of Leicestershire, and highly cultivated marshes of Lincolnshire, and other counties in the north, families, the very opposite to these, have been as carefully bred, possessing heavy carcasses, long wool, shorter legs, very small bone, with the most sluggish dispositions, without either the desire or the power to make exertion to obtain food."

And with these impressions, you will perceive I have not given up long woolled sheep, but have repeatedly ordered them from England, in addition to several imported parcels, which I had obtained here, or in Massachusetts; more especially as I consider combing wool essential to certain manufactures about to be introduced.

* Memoirs of the Pennsylvania Agricultural Society, page 135.

Breeding—Varieties are fixed by breeding in.

My success in crossing Tunisian long woolled sheep with "BEANE'S MIXED" family of Dishley blood, was sufficiently manifest in the fine rams which you so much admired, on their way to my friends in Maryland and Virginia. In crossing these animals of different breeds, BUT NOT OF DISTINCT RACES, both being of THE LONG WOOLLED RACE, I did not expect to obtain the good qualities of both, *without the defects of either;* I but hoped to procure the hardiness and fine mutton of Tunisian sheep, and some of the attributes, not of pure Dishley, but merely of "Beanes' MIXED" FAMILY of Dishley blood. I expected from *mongrels* but the degree of excellence possessed by *mongrels*, until after a succession of years, by proper selection and repeated crosses, I might have fixed certain varieties in one family, constituting thus an improved breed.*

I might have pursued my object for many years, without danger of breeding too closely in, even if I had begun with but two sheep. It is admitted by most of the opponents of breeding in-and-in, that with certain views the father may be united with the daughter—with the granddaughter—g. granddaughter—and g. g. granddaughter; for the g. g. granddaughter is supposed to retain one-sixteenth of the blood of the original dam. But a brother and sister should very rarely be joined, as they are both of *precisely* the same blood.

Much confusion has arisen from the want of proper technical language to convey the principles upon which the art of breeding has been established. The use of the words, family, breed, and race, indiscriminately, causes no little difficulty in communicating precise impressions on this subject: and to prevent cavil in the use of terms, I will endeavour to illustrate the acceptation in which they are taken by me.

I have called all the old "Bakewell" sheep derived from Beanes' importation, "a mixed *family*," as they are mongrels, derived from his importation of Dishley, Teeswater, jumbled, in most cases, with Southdown, Irish, and common American sheep. The term family is used, to designate their close affinity in all cases; yet the absence of determined characteristics, denies to them the appellation of "a breed," which, I suppose, must be marked by points, properties, or general conformation so distinct, as to leave no hesitation in regard to immediate origin or descent.

But "race," I conceive, in the language of breeders, em-

* At the time this experiment was made, my attempts to procure sheep from England had been defeated by the penalties opposed to their exportation by the British statutes.

braces many breeds; thus sheep are classed under the general terms, "long woolled and short woolled race."

By the term variety, I apprehend that breeders mean a product fortuitous, or the result of design, exhibiting peculiar characteristics, either in form or properties, or both, and which are so decided, as to prevent its being assigned to any known family, or particular breed.

* NEW VARIETIES ARE OBTAINED BY CROSSES—THEY ARE FIXED BY SELECTION, AND BREEDING IN. WHEN THEIR BLOOD HAS BEEN COMMIXED, AND THEIR OFFSPRING HAS BEEN JOINED DURING MANY GENERATIONS, WITH REFERENCE TO THE APPROXIMATION OF THE INDIVIDUALS SO JOINED TO THE POINTS OR PROPERTIES DESIRED, PRODUCING AN UNION OF THEIR CHARACTERISTIC PECULIARITIES, THEY ARE SAID TO BE ESTABLISHED OR FIXED IN ONE FAMILY, CONSTITUTING THUS AN IMPROVED BREED.

The first cross produces a variety called an half breed—the second, three-fourths—the third, seven-eighths—the fourth, fifteen-sixteenths, and so on. The variation of the blood in each cross is designated by figures to a certain point only, because there is a point where all sagacious breeders acknowledge, that the blood of the original sire or dam, is so nearly sunk or expelled, as to be little estimated, leaving them at that point, in possession of animals, usually equal to pure blood.

If it were not received among breeders, whose experience has led to the conclusion—if it were not sanctioned by men, whose habits of investigation, and general knowledge cannot fail to lead them to truth, it might be questioned whether an improved breed could be found, whose attributes could be retained without danger of some sudden transition, destructive of all the objects, in the promotion of which, it had been sought. This position may be illustrated by the success which the breeders of dogs, and even of birds, have attained.

The term "breeding in-and-in" appears to have been received by some writers in a different sense from that in which I apprehend it should be applied. I have considered Sir John Sebright's essay, published at the desire of the President of the Royal Society, decidedly the best which has appeared upon this subject; and in my impressions I am supported by Sinclair and Young, the one quoting Sebright in the "Code

* It will be recollected that this notice is intended for American husbandmen, who are not generally familiar with this subject.

of Agriculture," the other establishing his positions in the "Survey of Sussex," by giving the highest authorities—facts, as well as the opinions of practical men.

By opposing "breeding in-and-in," Sebright does not intend to exclude the union of animals nearly allied, for he justly remarks—

"Mr. Bakewell had certainly the merit of destroying the absurd prejudice which formerly prevailed against breeding from animals, between whom there was any degree of relationship; had this opinion been universally acted upon, no one could have been said to be possessed of a particular breed, good or bad; for the produce of one year would have been dissimilar to that of another, and we should have availed ourselves but little of an animal of superior merit, that we might have had the good fortune to possess."

And he continues, that brother and sister may even be joined with certain views, "should they BOTH BE VERY GOOD, and PARTICULARLY SHOULD THE SAME DEFECTS NOT PREDOMINATE IN BOTH, BUT THE PERFECTIONS OF THE ONE PROMISE TO CORRECT, IN THE PRODUCE, THE IMPERFECTIONS OF THE OTHER." Yet he opposes its being carried so far, *as some writers have imagined*, it was pursued by Bakewell, whose practice has never been traced.

I have contended that the effects of breeding CLOSELY in, are injurious; my practice, independent of any expression in favour of Sebright's doctrine, will determine that I do not object to the union, to a certain point, of animals nearly allied. One of my finest bulls (Malcolm) which I imported at the time I possessed many high-bred males of the same breed, is derived from a cow begotten by Western Comet, upon his g. g. granddaughter.

And that I am confirmed in this opinion by Mr. Coates, one of the oldest breeders of Great Britain, is evident in his declaring, that he has seen no bull which he would prefer to Malcolm as a sire.

The celebrated Knight, Mason, Rudd, Whitaker, Berry, and Sommerville, might be quoted in aid of that which has been advanced; but more pointedly to bring the soundness of Sebright's doctrine to your view, I would recal your own, and your brother's experience in flocks of sheep made decrepid by *too close* adherence to the same blood.

JOHN HARE POWEL.

To the President of the Pennsylvania Agricultural Society.

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ON THE PRINCIPLES

OF

Improved Breeding.

(Extracted from Sinclair's Code of Agriculture, page 104.)

On the advantages of well-bred Stock—Breeding in—How far essential—Breeding in-and-in TOO CLOSELY, *ruinous—Consequent decrease of size—Loss of characteristics—and procreative power.*

"The art of breeding consists in making a careful selection of males and females, for the purpose of producing a stock, with fewer defects, and with greater properties than their parents, by which their mutual perfections shall be preserved, and their mutual faults corrected.*

"The objects of improved breeding, therefore, are, to obviate defects, and to acquire and to perpetuate desirable properties; hence, when a race of animals have possessed, in a great degree, through several generations, the properties which it is our object to obtain, and any tendency to produce

* Sir John S. Sebright's Essay on the Art of Improving the Breed of Domestic Animals, p. 5 and 8. All breeding proceeds on the presumption, that the tendency of any individual animal is, to transmit to its offspring, the form, constitution, and qualities which it possesses; and as two animals are concerned in the production of one offspring, that one is expected to inherit, a form and constitution, compounded on the joint qualities of its two parents. Thus it is found, in numerous breeds of animals, as in deer, in the West Highland Cattle, in the North Devon, and in the wild cattle of Chillingham Park: the offspring, for an indefinite number of generations, have borne the same general characters.—*Observations by C. Mason, Esq., of Clifton, co. Durham.*

unwished for properties, has been extirpated, their progeny are said to be *well-bred*, and their stock may be relied on.*

"It was upon this principle of selection, that Bakewell formed his celebrated stock of sheep, having spared no pains or expense, in obtaining the choicest individuals, from all the best kinds of long or combing woolled sheep, wherever they were to be met with;† and it cannot be doubted, that any breed may be improved in the same manner, namely, that of putting the best males to the finest females. After a superior breed, however, has thus been obtained, it is a point that has been much disputed, whether it is proper to raise stock, 1. From the same family; or, 2. From the same race, but of different families; or, 3. From races entirely different.

"1. *Breeding from the same family.*—This method is called breeding *in-and-in*, or putting animals of the nearest relationship together.‡ Though this plan was for some time in fashion, under the sanction of Bakewell's authority, yet experience has now proved that it cannot be successfully persevered in. It may prove beneficial indeed, if not carried too far, in fixing any variety that may be thought valuable,§ but on the whole, it is so only in appearance. Under this system, the young animal comes into the world, on, comparatively, a very small scale. By keeping it fat from the first moment of its existence, it is made to attain a greater size than nature intended; and its weight in consequence will be very great in proportion to the size of its bones. Thus a generation or two of animals of an extraordinary form, and saleable at enormous prices, may be obtained; but that does not prove that the practice is eligible, if long persisted in.‖ On the contrary, if the system be followed up, the stock get tender and delicate, they become bad feeders; and though they retain their shape and beauty, they will decrease in vigour and activity, will become lean and dwarfish, and ultimately incapable of continuing the race. The instances of this are

* Sir John S. Sebright's Essay, p. 7. Incessant care and attention, however, are necessary, to keep them up to the mark; and this is rather fortunate than otherwise, since it perpetuates the *merit* of breeders, and the competition of stock.

† Young's Lecture, p. 9.

‡ It having been found, that this system produced animals quite deficient in vigour, those who are now possessed of a capital stock, keep two or three *streams of blood*, quite distinct, that they may avoid a consanguinity.

§ Sir John S. Sebright's Essay, p. 13. Paper by Henry Cline, Esq., Comm. vol. iv. p. 442.

‖ Paper by T. A. Knight, Esq., Comm. to the Board of Agriculture, vol. ii. p. 185. These dwarfish males, however, may not have an injurious effect on the stock of another person, especially the first cross, if the females be of a coarser quality, and, on Mr. Cline's principle, if they are of a larger size than the males put to them.

numerous. The celebrated breeder, Prinsep, found, that decrease of size unavoidable, in spite of all his endeavours, by keeping his young stock well, to prevent it.* Sir John S. Sebright tried many experiments by breeding *in-and-in*, with dogs, fowls, and pigeons, and found the breeds uniformly degenerate.† A gentleman who tried the system with pigs, brought them at last into such a state, that the females gave over breeding almost entirely, and when they did breed, their produce was so small and delicate, that they died as soon as they were born. Nay, Mr. Knight's experiments with plants have fully convinced him, that in the vegetable, as well as in the animal kingdom, the offspring of a male and female, not related, will possess more strength and vigour, than where they are both of the same family.‡ This proves how unprofitable such connexions are. That is no reason, however, why a breeder may not manage a particular family of animals to great advantage, by shifting or changing, instead of breeding directly from parents to offspring.§ Hence the propriety of procuring males, from the flocks and herds of those who have the same or a similar breed. It has been remarked, that those farmers have in general the worst flocks, who breed from rams produced on their own farms, and that an interchange of males is mutually beneficial.‖

"With respect to the doctrine, 'that when you can no longer find better males than your own, then by all means breed from them, for that best can only beget best;' it is ably refuted by an intelligent author, who has devoted much attention to the art of breeding. He observes, that there never did exist an animal without some defect in constitution, in form, or in some other essential quality; and such defect, however small it may be at first, will increase in every succeeding generation, and at last predominate in such a degree, as to render the breed of very little value.¶ Breeding *in-and-in*, therefore, would only tend to increase, and to perpetuate that defect, which might be eradicated, by a judicious selection, from a different family, in the same race.

* Paper by T. A. Knight, Esq., Comm. to the Board of Agriculture, vol. ii. p. 185.

† Sir John S. Sebright's Essay, p. 13.

‡ Paper by T. A. Knight, Esq., Comm. to the Board of Agriculture, vol. ii. p. 186.

§ Husbandry of Scotland, vol. ii. Appendix, p. 109. The same rule holds good regarding the human species. By a train of unfortunate circumstances, a brother and sister, german, ignorant of their close connexion together, were married. They had ten children, all of whom died before their parents.

‖ Paper by T. A. Knight, Esq., Comm. vol. ii. p. 172.

¶ Sir John S. Sebright on Improving the Breeds of Domestic Animals, p. 11 and 14.

"2. The breeding from different families of the same race, is therefore a preferable system. When these have been for some time established in different situations, and have had some slight shades of difference impressed upon them, by the influence of different climates, soils, and treatment, it is found advantageous, to interchange the males, for the purpose of strengthening the excellencies and remedying the defects of each family. On this principle, the celebrated Culley continued, for many years, to hire his rams from Bakewell, at the very time that other breeders were paying him a liberal price for the use of his own; and the very same practice is followed by the most skilful breeders at present.

"3. Any attempt at improvement, *by crossing* two distinct breeds or races, one of which possesses the properties which it is wished to obtain, or is free from the defects which it is desirable to remove, requires a degree of judgment and perseverance, to render such a plan successful, as is very rarely to be met with. Indeed, though such crosses may, by great attention, answer at first, yet it is generally found, that great singularities attend such mixtures: and, in breeding bulls, though some of them may apparently do, yet their breed is not to be trusted."

ON IMPROVING THE BREED OF ANIMALS.

(Extracted from Loudon's Encyclopædia of Agriculture.—1826.)

By *improvement of a breed* is to be understood the producing such an alteration in shape or description, as shall render the animal better fitted for the labours he has to perform; better fitted for becoming fat; or for producing milk, wool, eggs, feathers, or particular qualities of these. The fundamental principle of this amelioration is the proper selection of parents. Two theories have obtained notice on this subject, the one in favour of breeding from individuals of the same parentage, called the *in-and-in* system, and the other in favour of breeding from individuals of two different offsprings, called the system of *cross breeding*. As is usual in such cases, neither theory is exclusively correct,* at least as far as respects agricultural improvement; for, as will afterwards appear, the principles on which a selection for breeding so as to improve the carcase of the animal depends, will lead occasionally to either mode.

* Sebright's positions are thus confirmed. See his remarks upon Mr. Meynel's breeding "from the father and the daughter and the mother and the son," and even "from brother and sister;" to which Sebright does not object, "if they should both be very good, and particularly should the same defects not predominate in both, but the perfections of the one promise to correct in the produce the imperfections of the other."—*Letter by Sir John Saunders Sebright, Bart., M. P., on the Art of Improving the Breeds of Domestic Animals.*

On Breeding—Misapprehension of Terms—Mr. Meynel's Practice—Breeding in-and-in—Crossing—Selection—Objects—Effects—Sebright's Theory—On fixing varieties—Sheep—Fleece—Form—Its influence upon the Constitution and Secretions of the Animal.

By John Hare Powel, Esq.

(In Reply to Major Rudd, of Marton Lodge, England.)

Dear Sir,

On the degeneracy produced by breeding too closely *in-and-in*, I consider myself peculiarly fortunate in having your conclusive testimony. This fruitful subject of misapprehension had not till recently excited attention in this country among writers, although the evil tendency of following any stream of blood into too close affinity, has always been deprecated, and has been uniformly avoided, in the practice of successful husbandmen.

The subject is difficult, and the misuse of terms, or the want of precision, has in some instances been the source of discussion where little difference of opinion in fact prevailed.

In the language of Sebright, on various occasions, "I have freely stated my opinions without considering them as conclusive," and I venture to give the arguments which I have adduced in support of his essay, in order that I may be corrected by *you*, if I be wrong.

I apprehend, that his theory is founded upon the belief, that all domesticated animals are disposed "*to go back*," as having some tendency towards constitutional defects; and inferring that those of the same family are likely to be affected by tendency towards the same point, he thinks,

that by the union of animals so situated, and having *such tendency*, the defects will in the offspring be increased.

If he had defined his acceptation of the terms "*crossing*," and "*breeding in-and-in*," less difficulty might have prevailed. It is evident that the *common* application of these terms is very different from that in which I conceive them to be *correctly* used by him. He observes—

"*Mr. Meynel's fox-hounds are likewise quoted as an instance of the* success of this practice; but upon speaking to that gentleman upon the subject, I found that he did not attach the meaning that I do, to the term *in-and-in*. He said he frequently bred from the father and the daughter, and the mother and the son. This is not what I consider breeding *in-and-in;* for the daughter is only half of the same blood as the father, and will probably partake, in a great degree, of the properties of the mother."

"Mr. Meynel sometimes bred from brother and sister: this is certainly what may be called *a little close;* but should they both be very good, and particularly should the same defects not predominate in both, but the perfections of the one, promise to correct in the produce the imperfections of the other, I do not think it objectionable: much further than this, the system of breeding from the same family, cannot, in my opinion, be pursued with safety." * * * *

"Although I believe the occasional intermixture of different families to be necessary, I do not, by any means, approve of mixing two distinct breeds, with the view of uniting the valuable properties of both: this experiment has been frequently tried by others as well as by myself, but has I believe never succeeded. The first cross frequently produces a tolerable animal, but it is a breed that cannot be continued."*

"If it were possible, by a cross between the New Leicestershire and Merino breeds of sheep, to produce an animal uniting the excellencies of both, that is, the carcase of the one, with the fleece of the other, even such an animal, so produced, would be of little value to the breeder;† a race of the *same* description could not be perpetuated; and no dependance could be placed upon the produce of such animals; they would be mongrels, some like the New Leicester, some like the Merino, and most of them with the faults of both."

* Should not the product of the *first* cross be called a *variety?*
† Should not the term breed be used?

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Sebright asserts, as we all know, that varieties even of pigeons are established by selection and breeding in-and-in. The first cross produces an animal called an half-bred—the second, three-fourths—the third, seven-eighths—the fourth, fifteen-sixteenths, and so on. Of consequence, the variety obtained by *the first cross* could not be perpetuated, as the proportions of blood would annually vary, producing new varieties; which, after a long time and great vigilance in selection, might be established, constituting that which is technically called "an improved breed."

It cannot be denied, that the offspring of a male and female, of precisely the same degree of affinity to two *distinct* breeds, would not generally exhibit precisely the same characteristics, nor would they show precisely those of the sire and dam. In some, the attributes of one of the breeds would predominate, whilst in many, those of the other would in different degrees most probably appear.

Do we not find facts, corroborative of this, in the human family? But when the most desirable points and properties have, throughout many generations, been determined by the skill of the breeder in selecting the animals, which most nearly approximate the excellence which he seeks—in uniting those whose union would, by "the perfections of the one promise to correct in the produce the imperfections of the other," "a new variety is fixed."

The Leicester sheep has long and coarse wool, with an open fleece—the Merino has short and fine wool, with a close fleece; the properties, points, and general conformation of these animals, are opposed as much as those of any

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beings, of the same species, with which we are acquainted.

The product of the first cross, between a Merino and New Leicester sheep, would be covered, probably, with wool of medium texture; but when carried farther, it might become too short for combing, too long for the general manufactures of the country.

Sebright does not approve of crossing "*distinct* races," and gives an instance to show, what he means by *distinct* races. It is evident that the term race, is not always used in the same sense, nor should I have used it as he has done. The quadruped race embraces all animals having four legs, yet we find the term race applied frequently to a variety of a particular species; the improved Leicester sheep are called New Leicester, or the Dishley race.

It is evident, Sebright did not object to mixing animals of races, which he does not qualify by the term *distinct;* as he asserts, that Merino rams are frequently put to Southdown and Ryeland ewes, *all being of the fine woolled race*, which he approves *with certain views.* Nor would he object to uniting the Arabian with the turf horse—he knows that the best turf horses had been so produced; but he would oppose the union of a Welsh pony with a draught horse, or an Arabian courser with a Suffolk punch, if he desired animals either for the turf or the road. He is aware that varieties, sometimes fortuitous, sometimes the product of design, afford the means of establishing improved breeds of animals, or of meliorating cultivated fruits. He urges—

"The effect of *breeding in-and-in* may be accelerated or retarded by selection, particularly in those animals who pro-

duce many young ones at a time. There may be families so nearly perfect, as to go through several generations, without sustaining much injury from having been bred *in-and-in;* but a good judge would, upon examination, point out by what they must ultimately fail, as a mechanic would discover the weakest part of a machine before it gave way.

"Breeding *in-and-in* will, of course, have the same effect in strengthening the good as the bad properties, and may be beneficial, if not carried *too far, particularly in fixing any variety* which may be thought valuable."*

"I have tried many experiments by breeding *in-and-in* upon dogs, fowls, and pigeons: the dogs became from strong spaniels, weak and diminutive lap dogs, the fowls became long in the legs, small in the body, and bad breeders."

He justly remarks—

"Many causes combine to prevent animals, in a state of nature, from degenerating; they are perpetually intermixing, and therefore do not feel the bad effects of breeding *in-and-in:* the perfections of some correct the imperfections of others, and they go on without any material alteration, except what arises from the effects of food and climate.

"The greatest number of females will, of course, fall to the share of the most vigorous males; and the strongest individuals of both sexes, by driving away the weakest, will enjoy the best food, and the most favourable situations, for themselves and for their offspring.

"A severe winter, or a scarcity of food, by destroying the weak and the unhealthy, has all the good effects of the most skilful selection. In cold and barren countries no animals can live to the age of maturity, but those who have strong constitutions; the weak and the unhealthy do not live to propagate their infirmities, as is too often the case with our domestic animals. To this I attribute the peculiar hardiness of the horses, cattle, and sheep, bred in mountainous countries, more than to their having been inured to the severity of the climate; for our domestic animals do not become more hardy by being exposed, when young, to cold and hunger: animals so treated will not, when arrived at the age of maturity, endure so much hardship as those who have been better kept in their infant state.

"If one male, and one female only, of a valuable breed, could be obtained, the offspring should be separated, and placed in situations as dissimilar as possible; for animals kept together are all subjected to the effects of the same climate,

* Here the evil tendency must be corrected by the breeder's skill in "selection."

of the same food, and of the same mode of treatment, and consequently to the same diseases, particularly to such as are infectious, which must accelerate the bad effects of breeding *in-and-in.*"

His observations upon sheep entirely agree with those which I had made in England as well as here. He continues—

"IN COMPARING THE MERINO SHEEP WITH THE SOUTHDOWNS, WHICH ARE ALLOWED TO BE THE BEST OF OUR SHORT-WOOLLED BREEDS, THE FORMER HAVE VERY MUCH THE ADVANTAGE, BOTH AS TO QUANTITY AND QUALITY OF WOOL; BUT, I BELIEVE, THE LATTER WOULD PRODUCE BY FAR THE GREATEST QUANTITY OF MEAT, FROM A GIVEN QUANTITY OF FOOD, WHICH IS THE CRITERION BY WHICH WE DETERMINE THE RELATIVE VALUE OF ALL ANIMALS AS GRAZIER'S STOCK.

"Taking the gross produce, both of wool and of carcase, at the present prices, the Merino breed may perhaps be the most profitable: but should it be generally introduced, fine wool would become cheaper, and mutton dearer; it is therefore not easy to form a conclusive opinion upon this subject.

"Great improvements may undoubtedly be made in the Merino breed, as to their disposition to get fat. Their advocates say, with truth, that the Southdown sheep were but a few years ago as imperfect in shape as the Merino now are; but they should recollect, that a disposition to fatten at an early age was always the characteristic of the Southdown breed, even in its most unimproved state, and that it was from its possessing this very essential quality that so much attention has been paid to it.

"It is well known that a particular formation generally indicates a disposition to get fat, in all sorts of animals; but this rule is not universal, for we sometimes see animals of the most approved forms, who are *slow feeders*, and whose flesh is of a bad quality, which the graziers easily ascertain by the *touch*. The disposition to get fat is more generally found in some breeds than in others. The Scotch Highland cattle are remarkable for being almost all *quick feeders*, although many of them are defective in shape. The Welsh cattle have but little disposition to get fat: not from being particularly ill-shaped, but because they are almost invariably what the graziers call *bad handlers*.

"We must not therefore suppose, that the bad shape of the

Merino sheep is the sole cause of its being so ill calculated for the purpose of the grazier.

"An observation which Dr. Genner made to me about ten years ago, (the truth of which has since been confirmed by my own experience—that no animal whose chest was narrow could easily be made fat,) applies particularly to the Merino sheep, who are in general contracted in that part, and is well worth the attention of those who wish to improve this breed.

"PERHAPS THE GREAT SECRETION OF YOLK, SO ESSENTIAL TO THE PRODUCTION OF FINE WOOL, AND WHICH IS EXCESSIVE IN THE MERINO SHEEP, MAY BE INCOMPATIBLE WITH THE FATTENING QUALITY.

"I HAVE ALWAYS FOUND THE FINENESS OF THE FLEECE IN EXACT PROPORTION TO THE QUANTITY OF YOLK IT CONTAINED. THOSE WHO ARE UNACCUSTOMED TO EXAMINE WOOL, MAY CONSIDER THIS AS A CERTAIN CRITERION OF ITS QUALITY: FOR ALTHOUGH THE HAIR OF SOME DRY FLEECES MAY BE FINE, IT WILL ALWAYS WANT THE ELASTICITY WHICH IS SO MUCH VALUED BY THE MANUFACTURER."

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"The fineness of the fleece, like every other property in animals of all kinds, may be improved by selection in breeding. The opinion, that good wool could only be produced in particular districts, is a prejudice which fortunately no longer exists.

"Climate, food, and soil, have certainly some effect upon the quality of wool, but not so much as is generally supposed. The fleece is affected by the degree of nourishment which the animal receives, not by the quality of the pasture on which it is fed. If sheep are highly kept, their wool will become less fine, but in other respects its quality will not be deteriorated. The wool of a starved sheep may be apparently fine, but it will be brittle, and of little value to the manufacturer.

"A regular supply of food to the sheep is essential to the growth of good wool; for that part of the hair which grows when the animal is in a high state of flesh, will be thick, and that which is grown when it is reduced by hunger, will be weak and thin; and consequently the thickness of hair will always be irregular, if the animal passes from one extreme to the other.

"The alteration which may be made in any breed of animals by selection, can hardly be conceived by those who have not paid some attention to this subject; they attribute every

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improvement to a cross, when it is merely the effect of judicious selection.

"I have often been told, that from the beautiful shape of Mr. Elman's Southdown sheep, they must have been crossed with the New Leicester; and that from the fineness of their wool, they must have been crossed with the Merino breed; but I do not conceive, that even the skill of this very distinguished breeder could have retained the good shape of the former, without any appearance of the coarseness of its wool, or the fine fleece of the latter, without the deformity of its carcase, had he crossed his flock with either of these breeds.

"It may as well be contended, that the white pheasant, which is now become very common, was produced from a cross with a Dorking fowl, whereas it was one of those accidental varieties, which sometimes occur, and which has been perpetuated by selection. The same may be said of the endless variety in the colour, shape, and size, of rabbits, ducks, and pigeons, in a domesticated state; a variety produced by the art of man, and which did not exist in these creatures in their natural state.

"A greater proof, I conceive, of what may be effected by selection and perseverance, cannot be adduced

"There is, perhaps, no means by which the breeds of animals can be so rapidly, and so effectually improved, as by its being the particular business of some breeders to provide male animals for the purpose of letting for hire. Our horses could never have arrived at the degree of perfection which they have now attained, but from the facility which has been afforded to every one, by the public stallions, of breeding from the best horses of every description, at a moderate expense.

"The breeds of sheep to which this practice has been applied, have attained great perfection, while those which have never been attended to by persons in this particular business, show no signs of improvement.

"No trouble or expense will be spared by those who expect to derive profit, not from the quantity, but from the quality of the animals which they breed. The competition, which must always exist between breeders of this description, will be a never-failing stimulus to exertion.

"The common farmer, who seldom sees any stock but his own and that of his neighbours, generally concludes, that his own have arrived at the summit of perfection: but the breeder who lets for hire, must frequently submit his male animals to the inspection of the public, and to the criticism of his rivals, who will certainly not encourage any prejudices he may entertain of their superiority."

In illustration of Sebright's positions, various authorities might be adduced; but I consider the successful practice of Messrs. Colling, Charge, Maynard, Bates, Mason, Coates, Whitaker and yourself, affords the most decided evidence of the validity of his assertions, triumphantly sustained by the records of the Herd and Stud Books, wherein it will be found, that the best individuals have been the result of occasional and *judicious* crosses, and that the most valuable varieties have been established by skilful selection, and breeding in-and-in to a *limited extent.*

I am, my dear sir, with great respect,
Most truly yours,
JOHN HARE POWEL.

Extracts from Loudon's Encyclopædia of Agriculture.

That *the breed of animals is improved by the largest males*, is a very general opinion; but this opinion is the reverse of the truth, and has done considerable mischief. The great object of breeding, by whatever mode, is the improvement of form, and experience has proved that crossing has only succeeded in an eminent degree, in those instances in which the females were larger than in the usual proportion of females to males; and that it has generally failed where the males were disproportionally large. *Culley's Introduction, &c.* The following epitome of the science of breeding, is by the late eminent surgeon, Henry Cline, who practised it extensively on his own farm at Southgate.

The external form of domestic animals has been much studied, and the proportions are well ascertained. But the external form is an indication only of internal structure. The principles of improving it must, therefore, be founded on a knowledge of the structure and use of internal parts.

The lungs are of the first importance. It is on their size and soundness that the strength and health of animals principally depend. The power of converting food into nourishment, is in proportion to their size. An animal with large lungs is capable of converting a given quantity of food into more nourishment than one with smaller lungs; and therefore has a greater aptitude to fatten.

The chest, according to its external form and size, indicates the size of the lungs. The form of the chest should approach to the figure of a cone, having its apex situated between the shoulders, and its base towards the loins. Its capacity depends on its form more than on the extent of its circumference; for where the girth is equal in two animals, one may have much larger lungs than the other. A circle contains more than an ellipsis of equal circumference; and in proportion as the ellipsis deviates from the circle it contains less. A deep chest, therefore, is not capacious; unless it is proportionably broad.

The pelvis is the cavity formed by the junction of the haunch bones with

the bone of the rump. It is essential that this cavity should be large in the female, that she may be enabled to bring forth her young with less difficulty. When this cavity is small, the life of the mother and her offspring is endangered. The size of the pelvis is chiefly indicated by the width of the hips, and the breadth of the twist, which is the space between the thighs. The breadth of the loins is always in proportion to that of the chest and pelvis.

The head should be small, by which the birth is facilitated. Its smallness affords other advantages, and generally indicates that the animal is of a good breed. Horns are useless to domestic animals, and they are often a cause of accidents. It is not difficult to breed animals without them. The breeders of horned cattle and horned sheep, sustain a loss more extensive than they may conceive; for it is not the horns alone, but also much bone in the skulls of such animals to support their horns, for which the butcher pays nothing; and besides this there is an additional quantity of ligament and muscle in the neck, which is of small value. The skull of a ram with its horns, weighed five times more than a skull which was hornless. Both these skulls were taken from sheep of the same age, each being four years old. The great difference in weight depended chiefly on the horns, for the lower jaws were nearly equal; one weighing seven ounces and the other six ounces and three-quarters, which proves that the natural size of the head was the same in both, independent of the horns and the thickness of bone which supports them. In horned animals the skull is extremely thick. In a hornless animal it is much thinner, especially in that part where the horns usually grow. To those who have reflected on the subject, it may appear of little consequence whether sheep and cattle have horns; but on a moderate calculation it will be found, that the loss in farming stock, and also in the diminution of animal food, is very considerable, from the productions of horns and their appendages. A mode of breeding which would prevent the production of these, would afford a considerable profit in an increase of meat, wool, and other valuable parts.

The length of the neck should be proportioned to the height of the animal, that it may collect its food with ease.

The muscles, and the tendons which are their appendages, should be large; by which an animal is enabled to travel with greater facility.

The bones, when large, are commonly considered an indication of strength; but strength does not depend on the size of the bones, but on that of the muscles. Many animals with large bones are weak, their muscles being small. Animals that have been imperfectly nourished during growth, have their bones disproportionately large. If such deficiency of nourishment originated from a constitutional defect, which is the most frequent cause, they remain weak during life. Large bones, therefore, generally indicate an imperfection in the organs of nutrition.

To obtain the most improved form, the two modes of breeding described as the in-and-in and crossing modes, have been practised. The first mode may be the better practice, when a particular variety approaches perfection in form; especially for those who may not *be acquainted with the principles on which improvement depends*. When the male is much larger than the female, the offspring is generally of an imperfect form. If the female be proportionately larger than the male, the offspring is of an improved form For instance, if a well formed large ram be put to ewes proportionately smaller, the lambs will not be so well shaped as their parents; but if a small ram be put to larger ewes, the lambs will be of an improved form. The proper method of improving the form of animals consists in selecting a well formed female, proportionately larger than the male. The improvement depends on this principle, that the power of the female to supply her offspring with nourishment, is in proportion to her size, and to the power of nourishing herself from the excellence of her constitution. The size of the fœtus is generally in proportion to that of the male parent; and therefore, when the female parent is disproportionately small, the quantity of nourishment is deficient, and her offspring has all the disproportions of a starveling. But when the female, from her size and good constitution, is more than adequate to the nourishment of a fœtus of a smaller male than herself, the growth must be proportionately greater. The larger female has also a larger quantity of milk, and her offspring is more abundantly supplied with nourishment after birth.

Breeding—Good effects of crossing.

Abundant nourishment is necessary to produce the most perfect formed animal, from the earliest period of its existence until its growth is complete. As already observed, the power to prepare the greatest quantity of nourishment from a given quantity of food, depends principally on the magnitude of the lungs, to which the organs of digestion are subservient. To obtain animals with large lungs, crossing is the most expeditious method; because well formed females may be selected from a variety of large size, to be put to a well formed male of a variety that is rather smaller. By such a mode of crossing, the lungs and heart become proportionately larger, in consequence of a peculiarity in the circulation of the fœtus, which causes a larger proportion of the blood, under such circumstances, to be distributed to the lungs than to the other parts of the body; and as the shape and size of the chest depend upon that of the lungs, hence arises that remarkably large chest, which is produced by crossing with females that are larger than the males. The practice, according to this principle of improvement, however, ought to be limited; for it may be carried to such an extent, that the bulk of the body might be so disproportioned to the size of the limbs as to prevent the animal from moving with sufficient facility. In animals, where activity is required, this practice should not be extended so far as in those which are intended for the food of man. * * * * * * * *

Examples of the good effects of crossing may be found in the improved breeds of horses and swine in England. The great improvement of the breed of horses arose from crossing with the diminutive stallions, Barbs and Arabians; and the introduction of Flanders mares into this country was the source of improvement in the breed of cart horses. The form of the swine has been greatly improved, by crossing with the small Chinese boar.

The pliancy of the animal economy is such, that an animal will gradually accommodate itself to great vicissitudes in climate, and alterations in food; and by degrees undergo great changes in constitution; but these changes can be effected only by degrees, and may often require a great number of successive generations for their accomplishment. It may be proper to improve the form of a native race, but at the same time it may be very injudicious to attempt to enlarge their size; for the size of animals is commonly adapted to the soil and climate which they inhabit. Where produce is nutritive and abundant, the animals are large, having grown proportionally to the quantity of food which, for generations, they have been accustomed to obtain. * * *

The Arabian horses are, in general, the most perfect in the world; which probably has arisen from great care in selection, and also from being unmixed with any variety of the same species; the males, therefore, have never been disproportioned in size to the females.

The native horses of India are small, but well proportioned, and good of their kind. With the intention of increasing their size, the India Company have adopted a plan of sending large stallions to India. If these stallions should be extensively used, a disproportioned race must be the result, and a valuable breed of horses may be irretrievably spoiled.

From theory, from practice, and from extensive observation, the last more to be depended on than either, "it is reasonable," Cline continues, "to form this *conclusion:* it is wrong to enlarge a native breed of animals, for in proportion to their increase of size, they become worse in form, less hardy, and more liable to disease." (*Communications to the B. of Ag.* vol. iv. p. 446.)

The above opinions may be considered as supported by the most eminent practical breeders, as Bakewell, Culley, Somerville, Parry, and others, and by most theorists, as Coventry, Darwin, Hunt, Young, &c. T. A. Knight writes in the Communications to the Board of Agriculture in favour of cross breeding, as do Pitt and others in the County Surveys, but mostly from very limited experience. * * * * * * * *

Of the general Principles of Rearing, Managing, and Feeding Domestic Animals.

After the birth, the first interference on the part of man should be that of supplying the mother with food of a light and delicate quality, compared to

that which she had been in the habit of using, and also of administering the same description of food to the offspring, so far as it may by its nature be able to use it. The gentlest treatment should accompany these operations; and the opportunity taken of familiarizing both parent and offspring with man, by gently caressing them, or at least, by familiar treatment on the part of the attendant.

As the animals increase in size and strength, they should have abundance of air, exercise, and food, according to their natures; and whatever is attempted by man in the way of taming or teaching should be conducted on mild and conciliating principles, rather than on those of harshness and compulsion.

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Food, though it must be supplied in abundance, ought not to be given to satiety. Intervals of resting and exercise must be allowed according to circumstances. Even animals grazing on a rich pasture have been found to feed faster when removed from it once a day, and either folded or put in an inferior pasture for two or three hours. Stall-fed cattle and swine will have their flesh improved in flavour by being turned out into a yard or field once a day; and many find that they feed better, and produce better flavoured meat when kept loose under warm sheds or hammels, one or two in a division, a practice now very general in Berwickshire. * * * * * In general it may be observed, that if the digestive powers of the animal are in a sound state, the more food he eats, the sooner will the desired result be obtained; a very moderate quantity beyond sufficiency constitutes abundance; but by withholding this additional quantity, an animal, especially if young, may go on eating for several years, without ever attaining to fatness.

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In young growing animals, the powers of digestion are so great, that they require less rich food than such as are of mature age; for the same reason also they require more exercise. If rich food is supplied in liberal quantities, and exercise withheld, diseases are generated, the first of which may be excessive fatness. * * * * * Common sense will suggest the propriety of preferring a medium course between very rich and very poor nutriment. * * * * * * * *

Salt, it appears, from various experiments, may be advantageously given to most animals, in very small quantities; it acts as a whet to the appetite, promotes the secretion of bile, and, in general, is favourable to health and activity. In this way only can it be considered as preventing or curing diseases; unless perhaps in the case of worms, to which all saline and bitter substances are known to be injurious. * * * * * *

Where a sufficient degree of warmth to promote the ordinary circulation of the blood is not produced by the natural climate, or by exercise, it must be supplied by an artificial climate. Houses and sheds are the obvious resources both for this purpose, and for protection from *extremes of weather*. Cold rains and northerly winds are highly injurious, by depriving the external surface of the body of caloric more rapidly than it can be supplied from within by respiration, and the action of the stomach; and also by contracting the pores of the skin, so as to impede circulation. When an animal happens to shed its covering, whether of hair, wool, or feathers, at such inclement seasons, the effects on its general health are highly injurious. The excessive heats of summer, by expanding all the parts of the animal frame, occasions a degree of lassitude, and want of energy even in the stomach and intestines; and while the animal eats and digests less food than usual, a greater waste than usual takes place by perspiration. Nature has provided trees, rocks, caverns, hills and waters, to moderate these extremes of heat and weather, and man imitates them by hovels, sheds, and other buildings, according to particular circumstances.

Good air and water it may seem unnecessary to insist on; but cattle and horses, and even poultry pent up in close buildings, where there are no facilities for a change of the atmosphere, often suffer on this account. A slight degree of fever is produced at first, and after a time, when the habit of the animal becomes reconciled to such a state, a retarded circulation, and general decay or diminution of the vital energies takes place.

Moderate exercise ought not to be dispensed with, where the flavour of animal produce is any object; it is known to promote circulation, perspiration, and digestion, and by consequence to invigorate the appetite. Care must be taken, however, not to carry exercise to that point where it becomes a labour instead of a recreation. In some cases, as in feeding swine and poultry, fatness is hastened by promoting sleep and preventing motion, rather than encouraging it; but such animals cannot be considered healthy fed; in fact their fatness is most commonly the result of disease.

Tranquillity is an obvious requisite, for where the passions of brutes are called into action, by whatever means, their influence on their bodies is often as great as in the human species. Hence the use of castration, complete or partial separation, shading from too much light, protection from insects, dogs, and other annoying animals, and from the too frequent intrusion of man.

Cleanliness is favourable to health, by promoting perspiration and circulation. Animals in a wild state attend to this part of their economy themselves; but in proportion as they are cultivated, or brought under the control of man, this becomes out of their power; and to insure their subserviency to his wishes, man must supply by art this as well as other parts of culture. Combing and brushing stall-fed cattle and cows is known to contribute materially to health; though washing sheep with a view to cleaning the wool often has a contrary effect from the length of time the wool requires to dry. * * * * *

Comfort. An animal may be well fed, lodged, and cleaned, without being comfortable in every respect; and in brutes, as well as men, want of comfort operates on the digestive powers. If the surface of a stall in which an ox, or a horse stands, deviates much from a level, he will be continually uneasy; and he will be uneasy during night, if its surface is rough, or if a proper bed of litter is not prepared every evening for it to repose on. The form of racks and mangers is often less commodious than it might be. A hay rack which projects forward is bad; because the animal in drawing out the hay is teased with the hay seeds falling in its eyes or ears; and this form, it may be added, is apt to cause the breath of the animal to ascend through its food, which must after a time render it nauseous. For this reason hay should lie as short a time as possible in lofts, but when practicable be given direct from the rick.

Extract from the Memoirs of the Pennsylvania Agricultural Society.

The tendency towards fat proceeds, I should presume, from the power of the animal's stomach and intestines, to separate the nutritious from the excrementitious parts of its aliment. Nature wisely destines certain portions of nutritious matter, at proper times, for the secretion of milk. That milk is an unctuous and very nutritious fluid, cannot be questioned—much therefore of nutrition, is withdrawn by the milk, from the formation of fat—but does it follow, that such portions as have made butter, or *produced fat* in the calf, when no longer directed towards the secretion of milk, must necessarily lose all their properties and pass off in urine or in dung? Do we not invariably find, that all cows, when dry, become more readily fat, than when they give milk? Is it not then to be inferred, that the matter, which would have passed off in milk, may be made to produce fat? Does not our experience show, in all families of wild cattle, where the perverseness of man has not interfered with the dispositions of nature, that when kept quiet, and well fed, they exhibit great tendency towards the secretion of fat? In the cattle even of Asia, and China, in the Kyloes of Scotland, in the wild breeds of Louisiana, and in the little mountain cows of America, such disposition is generally shown.

The mistaken ingenuity of the breeders of Holland, whence all the deepest milkers, whether Holderness, "Old Short Horns," Holstein, or whatever they may be termed in America, are in some measure derived, led them into an absurd cross, which produced unthrifty animals, affording excessive secre-

tions of *bad* milk—thus not only prematurely exhausting the cow, by which they are given, but requiring great quantities of food for her support. That disease, peculiar tendency towards fatness or leanness, or copious supplies of thin, or lesser quantities of rich milk, or even the determination of a particular colour to any definite part of the body, as white at the end of a Devon's tail, may be established, by perseverance and art, every man conversant with the subject will readily believe. Because a Hollander chooses to wear out his cow, or have a race of animals, which will not readily become fat, even when dry, and the cupidity of the venders of milk, in the neighbourhood of large towns in England, or America, has led them to propagate for one object this unthrifty breed of cattle, is it to be inferred, that the efforts of Colling's *coadjutors* could not obtain, by crossing, a race adapted to the general purposes of the country—fitted, at *different times* for the production *of rich milk* and *the secretion of fat?*

Murray's System of Chemistry.—"The blood is a compound of this kind," &c.—"And if we suppose a fluid thus passing through tubes of different diameters, and undergoing successive decompositions, we may easily conceive that very different products may be formed from the same compound. This affords a simple view of the nature of secretion. No complicated apparatus is necessary for the performance of the change; all that is necessary being the propulsion of the blood through minute vessels capable of contraction. It has accordingly frequently been observed, that new products are formed without the intervention of glands; such is the formation of the fat or of muscular fibre. It is easy to conceive that the formation of these may take place in the extreme vessels where these products are deposited, and in like manner in the mere course of the circulation, may be formed the gluten, albumen, and other principles of the blood itself. From secretion a variety of products are formed, as the bile, milk, fat, the bony matter, the matter of membranes, and a variety of others. These complete the formation of animal matter, and comprehend its several varieties. Such are the different steps of the process of animalization. The food is digested in the stomach, mixed with animal matter in the intestinal canal, and converted into chyle; this mingles with the blood, and loses a portion of carbon in the lungs: in the extreme vessels it is converted into the general principles of animal matter, and in the glands, is converted into various secreted products."

White, on the Formation of the Digestive Organs of the Cow.—Vol. 4. *chap.* 1. *page* 13.—"The stomach then may be considered both as a muscular and as a vital organ. If we view it in another light, we shall consider it as one continued bibulous surface, sucking up the chyle as it is formed, and conveying it by means of the milk vessels, to the four receptacles which are named the quarters of the udder. There is another order of absorbent vessels in the stomach, and in the small intestines also, especially in the upper part, named lacteals, which ramify through the mesentery, and terminate in the thoracic duct, having previously passed through what are named the mesenteric glands; that is for the most part, for some are seen going over their surface. These lacteals are subsidiary, in their office, serving to convey chyle when the mesenteric glands are inflamed and obstructed. Chyle, as we find it in the lacteals, is exactly like milk in every respect, and is, in fact, the same thing. The fluid of the thoracic duct is different; it is semitransparent, has always a little oil floating on it, and is now and then found mixed with a little blood, which probably falls into it after death from the great vein in which it terminates. This depends on the valve of that part giving way, in consequence of death. Chyle and milk are then precisely the same thing, and in the cow there are three thoracic ducts, two going to the udder and conveying milk, and one to a great vein near the heart, conveying that fluid from which the blood is formed. When the animal has young, the lactiferous vessels, for so the minute branches of the two former thoracic ducts should be named, have a predominant aptitude to absorb the chyle, and a sufficient quantity only is taken up by the chyliferous vessels going to the third thoracic duct, to supply the heart."

FROM THE BRITISH FARMER'S MAGAZINE.

AN ESSAY* ON THE QUESTION

"*Whether the Breed of Live Stock, connected with Agriculture, be susceptible of the greatest Improvement from the qualities conspicuous in the Male, or from those conspicuous in the Female Parent?*"

By the Rev. Henry Berry, *Acton Beauchamp, Worcestershire.*

It will be acknowledged by every competent judge, that the question proposed by the Highland Society is one abounding in difficulties, but it is hoped that the facts and arguments, which will be hereafter used, will prove that the writer has bestowed upon the subject a considerable degree of attention, and that he has not presumed to intrude visionary opinions, unconfirmed by the test of experience, or adopted without the previous labour of investigation and reflection.

That the discovery of an *independent* faculty (if such exist) in the male or female parent, to confer peculiar properties on the offspring, would be attended with beneficial results to the breeders of animals connected with agriculture, must at once be admitted; and this impression, generally entertained, is probably one of the causes which have led to the assignment of such peculiar faculty to the sexes alternately, as circumstances have occurred which appear to justify such opinion. No fact is more notorious than this, that many breeders consider certain horses or mares to confer striking characteristic traits on their offspring. The same also is asserted respecting neat cattle, and it may be added, that such peculiarity is principally assigned to the male. In order that the writer may render more effective his arguments against the correctness of such opinion, it is purposed briefly to state what are conceived to be the circumstances which have led to its adoption, and to exhibit them in their true light—as not justifying the conclusions to which they have led.

During all periods since agriculture has obtained any considerable degree of attention, greater or less care, according to circumstances, has been paid to the different breeds of animals, whose improvement formed an important branch of

* The Highland Society of Scotland awarded Mr. Berry their Honorary Medal for his Essay on this subject; but as by the rules of the Society we could not avail ourselves of the Paper for our first Number, the Essay has been kindly rewritten for us, which circumstance will account for any literal variation, though the matter will be found the same.—*Editor.*

rural economy. An obvious consequence of this care, resulting scarcely less from a laudable degree of emulation, than from a desire of lucrative improvement, would be the production of an improved race of *males;* the male animal affording advantages superior to the female for the improvement of the species, inasmuch as he is available to a number of the latter, while the services of the female must be restricted to her single, or little more numerous produce of the year, as the case might be. Further, it may be observed, that in earlier times, as in the present, the majority of breeders would pursue their object of improvement with the less expensive and easily acquired herd of ordinary females, looking to the selected males for the accomplishment of their wishes. Few would possess mares calculated to breed a *stallion,* as few also would have a cow sufficiently good in quality to produce a bull for the improvement of stock. The ideas entertained respecting the requisites of a sire would probably be similar, and lead to the adoption of a general standard of excellence, towards which it would be required that each male should approximate, and thus there would exist, among what may be termed fashionable sires, a corresponding form and character, different and superior to those of the general stock of the country. This form and character, it may be observed, would in most instances have been *acquired by perseverance in breeding, from animals which possessed the important or fancied requisites,* and might therefore be said to be almost *confirmed* in such individuals. Under these circumstances, striking results would, doubtless, follow the introduction of such sires into a common stock; results which would induce superficial observers to remark, that individual sires possessed properties as *males,* which in fact were only assignable to them as *improved* animals. A horse of the foregoing description, bred from ancestors of qualities similar to his own, would impress his offspring strongly, the mares with which he bred possessing no *determinate* character or form, as regarded their descent, being the produce of heterogeneous connexion, of the co-mingling of perhaps a hundred different shapes, and consequently possessing no tendency to any one in particular. Further, the female's produce, one annually, would be presented too rarely to afford a conviction similar to that entertained in favour of the male, among whose numerous colts of the year, there must be, even by chance, a considerable number bearing his features. In these, and in similar circumstances, it seems not unreasonable to suppose that the opinion originated of our breeds of cattle being more susceptible of improvement from the male than from the female parent.

In the present day, effects of the same nature have produced the same opinions, and the highly improved state of some of our agricultural stock has contributed greatly to strengthen and confirm them. It is observable, however, that the assignment of this intrinsic property is not made now, so exclusively as formerly, to the male. The female has also obtained her advocates, who, without advancing any argument in support of their doctrine, maintain it nevertheless with considerable pertinacity. It is presumed that the cause of this partial change in public opinion may be easily assigned. To persons conversant with improved breeding, it is well known that of late years numerous sales have taken place of the entire stocks of celebrated breeders of *Sires*, and consequently that the females, valuable for such purpose, have passed into a number of hands. Unfortunately, persons, who have on these occasions become possessed of a fine female, have not always been equally successful with regard to a male; the high prices at which such animals have sold, having placed an impediment in their way; or a disposition to deem one step towards improvement adequate to the promotion of their views, having led them to remain contented with a measure, which, to a certain extent, would benefit their stocks; but which must also as certainly be considered a sacrifice of the high-bred female in question. Such persons have introduced a cow so acquired, to a bull, inferior in point of descent, and general good qualities; and the offspring has proved superior to the sire, by virtue of the dam's excellence, to which by certain degrees it would approximate; and thus has arisen an opinion that particular females, also, possessed the property of impressing their characteristics upon the offspring.

THAT HIGH BLOOD, OR, IN OTHER WORDS, THAT ANIMALS LONG AND SUCCESSFULLY SELECTED, AND BRED WITH A VIEW TO PARTICULAR QUALIFICATIONS, IMPRESS THEIR DESCENDANTS IN THE MANNER HERE INTIMATED, is a fact too well established in experience to be overthrown by any of the chance exceptions which may, no doubt, be taken against this, as well as against other rules; and TO HIGH BLOOD it is, that the writer ascribes the quality, whether in the male or female parent, which the Highland Society has been desirous to assign correctly; and he is not without a hope that it will be thought he has shown in as satisfactory a manner as a case, where much must depend on conjecture, will admit of, how it has happened that the opinions prevalent on this subject ever came to be entertained.

The next object will be to support his opinion by the evidence which certain facts present, as he thinks, conclusively in its favour.

The blood stallion, *Militiaman*, covered several seasons at Bromyard, in Herefordshire. His colts were generally of a chesnut colour, and partook in a striking degree of his peculiar form. He was consequently pointed out as a horse impressing his stock with his own characteristics; and instanced as a proof of the existence of this peculiarity in the male. But it should be remarked, that in no district, where a tolerable number of colts are bred, are worse mares to be found than around Bromyard. They are promiscuously and ill-bred, and deficient in good form and character. Militiaman is a chesnut horse, bred from a tribe also principally chesnut. Is it then surprising that this horse, crossed with mares destitute of characteristic features, and bred in such a manner as to possess no predisposition to any particular form or colour, should impress his colts with his own peculiarities, derived from breed, or particular descent? It is presumed that no other result could reasonably be anticipated.

Mr. John Heming, of Acton Beauchamp, Worcestershire, had for some years a stock of common Hereford cows, of red colour, with white faces, which uniformly produced calves of the same colour. To this stock Mr. Heming used a bull, of the improved breed, *one season only*. The consequence was, that the bull's marks, dark spots on the face, appeared in almost all his calves, and are prevalent in his descendants, to the present day. Mr. Heming's originals were indiscriminately collected, and deficient in breed or uniformity of characteristic, except in the white face. They were generally improved by the introduction of the well-bred bull; and his *breed*, it is suggested, manifested its influence by the manner in which he conferred his peculiar colour.

Mr. Woodward, of Birlingham, Worcestershire, purchased twelve deep-milking Yorkshire cows, without pretensions to breed, or disposition to fatten. With these cows he used a high-bred Hereford bull, and in the produce lost the disposition to milk, acquiring that of laying on fat. In a similar experiment with the same cows and another Hereford bull, in the following year, he experienced precisely the same results. Comment is hardly necessary on these strong cases.

The writer has been some years in possession of an improved breed of pigs, which are chiefly of a sandy or brown colour. His sows of this breed, crossed with common country boars, almost invariably produce litters of their own colour. Size only has been obtained by the cross. The same results have followed the use of his boars with country sows;

but the fact which speaks most forcibly for his argument is, that a litter of pigs from one of these half-bred sows, by a high-bred boar, he is now using, of a white tribe, are all white; blood thus strikingly evincing its efficacy in conferring characteristic traits.

The writer's brother was also lately in possession of well-bred pigs, whose peculiarity consisted in a short pricked ear. The produce of these pigs, when crossed with the large pendent-eared swine of North Wales, was invariably similar in the ear to the better-bred animal, whether male or female.

Hitherto, the instances and arguments adduced have been confined to the structure, or external marks of animals, and if a satisfactory conclusion may be drawn respecting these, the question proposed by the Highland Society as to disposition, must be involved in it. A brief remark shall therefore suffice, offered more with a view to show that opinions are very erroneously entertained on this subject, than from a conviction that the proceeding is necessary.

The writer has known many tribes of animals disposed to break from their pastures, and has consequently heard it asserted that particular cows conferred the disposition on their offspring. Now, the fact is, this was no matter of *disposition* at all, but was a *consequence* of the animals in question having very thin hides, which rendered them impatient of heat and the attack of flies. It is thus too frequently that, for want of due attention, effects are ascribed to wrong causes.

To suppose that either the male or female parent possess an *independent inherent propensity* to impress their offspring, is to embarrass the pursuit of breeding in no trifling degree. Most persons can judge of the fitness of that proceeding which aims to improve the produce of an inferior animal by the introduction of one superior. That like will produce like, or, that, in ordinary instances, two good animals will breed a third good one, appears probable to every capacity, from a consideration of very common principles, notwithstanding admitted exceptions to general rules. But to suppose that an independent sexual ability exists in either male or female, appears calculated to unsettle the doctrines of skilful men, and to lead to the adoption, in their stead, of opinions unsupported by a reference to any known principles, leaving very important interests to the dangerous conduct of a blind guide.

If it could be proved that stock are more susceptible of improvement from the male parent, the question then would be, how is a male, possessing the requisites, to be obtained? Surely it will not be replied, that his being begotten by such a male would alone be sufficient, without the possession of excellence on the dam's side. It is possible that a good male

may beget a son equally good as himself in *externals*, from an ill-bred bad female, but it is certain that such son will prove comparatively an inferior stock-getter, it being an established fact that animals *breed back* in point of resemblance, and it is therefore considered necessary, for the object of improvement or to retain excellence, to have a pedigree as little dubious as possible, for several generations. SO IMPORTANT, INDEED, IS THIS FACT OF CORRECT DESCENT, THAT MANY BREEDERS, WHO HAVE, FROM CAUSES WHICH IT IS DIFFICULT TO ASCERTAIN, A WELL-BRED ANIMAL OF DEFECTIVE FORM, VENTURE TO USE HIM, RELYING ON HIS BLOOD, AND EXPERIENCE NO REASON FOR REGRET THAT THEY HAVE DONE SO. But what, in such circumstances, is the mode of proceeding? Is such male used indiscriminately to all the females, or is it considered necessary to check his tendency towards defective form, by good points counteracting in the females? Undoubtedly such care is taken, and thus the system of judiciously counteracting defects on either side, whether male or female, is successfully practised, in preference to one adopted on the belief of the existence of an independent sexual capability.

It has already been remarked, that the great improvement made during late years in our breeds of stock, has tended greatly to promote the agitation of the question at issue. This is easily accounted for. Various circumstances have combined to rouse the attention of farmers to the unprofitable state of their stocks. The consequence has been, that well-bred males have been resorted to, and the produce of the first cross has so far exceeded the most sanguine hopes, taking its character in externals, as well as in positive utility, in a great measure from the well-bred male, that new advocates for the opinion in his favour have thus been added to the number which previously existed.

A reference to the stock of any professional bull breeder would serve to show how erroneous is the opinion founded on such grounds. It would there be seen that, upon the whole, the produce of different years are subject to but little fluctuation in point of excellence, supposing the requisite skill to be practised by the breeder. The system of crossing the different males and females being correctly understood, and above all, *the females also being well-bred*, the standard of excellence is supported with tolerable uniformity; and though occasionally an extraordinary animal makes its appearance, none of the effects are apparent which excite surprise when the male only, or female, happens to be well-bred. Contrast this state of things with that which will be apparent in the infe-

rior stock, to improve which the well-bred bull is put in requisition. There it is that the produce astonishes, for there the sire impresses characteristics peculiarly his own. If it be inquired, why he does so? The answer is easy, for the reason is obvious. His excellencies are the accumulated acquisitions of many ancestors; they are positive, and in comparison fixed; while the cows, with which he has been used, possess little or no character, and have been bred without regard to any point, but the production of animals to increase the stock upon the farm.

It is conceived that a few facts in corroboration of this reasoning may be here appropriately introduced. They will be derived from the history of the Improved Short-Horns, a breed of cattle with which the writer happens to be best acquainted.

Mr. Colling's bull, *Comet*, impressed the generality of his stock with his own peculiar traits in so remarkable a degree, that it was easy for a stranger to select them from a great number of animals. But in Comet, it should be remembered, centered what was called the best blood, and it ought to be remarked, that, at that period, good short-horns were not very numerous; and Comet, except in his owner's and Mr. Charge's stocks, was introduced to cows comparatively inferior. It is not, therefore, singular that from such a bull a stock very superior to the dams should spring; but in Mr. Colling's own stock, where the cows were also superior, and in Mr. Charge's, to which the same remark applies, no such striking effects followed the use of this bull. The cows possessed positive characteristics, the effect of improved breeding, as well as Comet; and if his traits did predominate in a more than usual degree in the offspring, it was principally only where the cows bore a near affinity to him. The same remarks are applicable to *Major*, a son of Comet. With well-bred cows he proved himself a good bull, but it was when he came to be used with inferior cows that his excellence, as a stock-getter, was fully revealed; but his merit in this respect is well known. High breed here again predominated in the usual extraordinary manner, for Major was by Comet out of the celebrated Cow-Lady, all whose produce sold at prices so high, as strongly to evince how they were regarded in public estimation. Here then existed positive qualities, transmitted by descent, on the bull's side, before which the indeterminate character of ill-bred cows gave way; and it led to the production of a race better than the females, an improvement to be ascribed to Major's blood, and not to any sexual superiority. The same remarks may be made as to *Western Comet*, a son of Major, out of a capital cow of Mr. Charge's. All his stock were most excellent, but the

bull's breeding was most pre-eminently evinced in his descendants from ordinary cows. Thus it appears that when a male and female are equally well bred, and of nearly equal individual excellence, it is not probable that their produce will exhibit any general proof of a preponderating power, in either parent, to impress peculiar characteristics. But should the contrary appear to be the case, upon diligent inquiry it will seldom fail to be ascertained, that peculiar characteristics have been derived from ancestors, which, under certain circumstances of contact or crossing, have become prominent features in the offspring. A simple case will illustrate this remark. Suppose the ancestors of a bull in the third or fourth generation, to have possessed defective shoulders, but that defect not to exist in himself, in consequence of close attention to this point on the part of his breeder. Cross such bull with a cow defective in her shoulders, and, probably, the defect will exist in the offspring in an increased degree, and will obtain for the dam the character of breeding a produce similar to herself. Whereas, in fact, this is an injudicious cross, made in ignorance or disregard of the facts that animals *breed back;* that they possess a greater tendency to defect than to perfection; and that the only safe mode of breeding is that of strictly scrutinizing the pretensions of ancestors.

With regard to the bulls which have been instanced, Comet, Major, and Western Comet; had they been bred from cows of very inferior blood, although they might have possessed excellent form, with other good qualities, experience assures us that they could not have deserved regard as *sires*. Comet's sons, from well-bred cows, begot good animals; but such as were descended from inferior females, left no reputation behind them, but as *sons of Comet*.

In order that the foregoing reasoning may be understood, and a very common and fatal error guarded against, it is thought necessary to explain, as to the terms *high-blood* and *highly-bred*, that the writer does not mean to attach unmerited value to mere pedigree, unsupported by solid pretensions to excellence; he would only recommend to public estimation, that long descent from animals all individually possessed of valuable qualities, which qualities are prominent in their descendants.

If what has been advanced shall appear to be founded in reason, then, it is submitted, that, with our present stock of information on this subject, one only rational course of proceeding can be adopted by breeders, viz. that of resorting to the best males; at once a simple and efficacious mode of improving such stocks as require improvement, and the sole mode by which stocks, already good, can be preserved in their excellence.

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PEDIGREES

OF

MR. POWEL'S

Improved Durham Short-horn Cattle,

SELECTED EXPRESSLY FOR DAIRY PURPOSES,

BY MR. COATES,

The keeper of the Herd Book, and one of the oldest and most celebrated breeders in Great Britain,

To whom a standing order had been given to obtain the best animals, and without limitation as to price, when they could be procured from Mr. Whitaker's fold.

[The following animals can be traced in the Herd Book.]

MALCOLM,

Imported in 1825, calved in 1823 (bred by J. Whitaker, Esq.) got by Enchanter, dam Western Lady,* by WESTERN COMET; g. d. by Western Comet; gr. g. d. by Western Comet; gr. gr. g. d. by Western Comet; gr. gr. gr. g. d. Haughton.

Enchanter, light grizzle (bred by Mr. T. Bates) got by His Grace, dam Fairy (bred by Mr. Hustler) by Duke; g. d. OLD DAISY† by FAVOURITE, the sire of Comet; gr. g. d. by Punch; gr. gr. g. d. by HUBBACK.

Western Comet (bred by Mr. Charge) got by Mr. C. Colling's Major, dam Gentle Kitty, by Mr. Charge's Grey Bull; g. d. by FAVOURITE.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's Bull, dam (from the stock of Sir James Pennyman, and these from the stock of Sir William St. Quintin, of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

His Grace (bred by Mr. Bates) got by Ketton the Second, dam DUCHESS the Second, by Ketton the First, g.

* Western Lady gave 28 quarts per day.

† Old Daisy gave 32 quarts per day.

d. DUCHESS* the First (bred by Mr. C. Colling) by COMET; gr. g. d. by FAVOURITE; gr. gr. g. d. by Daisy Bull; gr. gr. gr. g. d. by FAVOURITE; gr. gr. gr. gr. g. d. by HUBBACK; gr. gr. gr. gr. gr. g. d. by JAMES BROWN'S RED BULL.

Duke, by COMET, dam DUCHESS by FAVOURITE; g. d. by DAISY; gr. g. d. by FAVOURITE: gr. gr. g. d. by Hubback; gr. gr. gr. g. d. by JAMES BROWN'S RED BULL.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE; g. d. FAVOURITE, by R. Alcock's Bull; gr. g. d. by Smith's Bull; gr. gr. g. d. by Jolly's Bull.

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Major (bred by Mr. C. Colling) got by Comet, dam LADY, by Grandson of Bolingbroke; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE (bred by Mr. Maynard) by R. Alcock's Bull.

Grey Bull (bred by Mr. Charge) got by FAVOURITE, dam Fleck'd Lady, by Young Bartle; g. d. First Lady, by Bartle; gr. g. d. Old Simmon, descended from the STUDLEY BULL.

Snowden's Bull (bred by Mr. George Snowden) got by Mr. William Robson's Bull (bred by Mr. Waistell, near Darlington) dam Barforth.

William Robson's Bull (or Waistell's Bull) got by Mr. James Masterman's Bull.

James Masterman's Bull (bred by Mr. Walker) got by the STUDLEY BULL.

* Mr. C. Colling remarked "the Duchess and Daisy tribes were all good milkers." (*Berry's Pamphlet.*)

Ketton the Second, got by Ketton the First, dam by Grandson of Favourite; g. d. by Mr. James Brown's red bull.

Ketton the First, got by FAVOURITE; d. (g. d. of OLD DUCHESS) by the Daisy Bull (by FAVOURITE) g. d. by FAVOURITE; gr. g. d. by HUBBACK; gr. gr. g. d. by Mr. James Brown's red bull.

COMET* (sold for 1000 guineas) red and white roan, calved in 1804 (bred by Mr. C. Colling) got by Favourite, dam Young Phœnix, by FAVOURITE; g. d. Phœnix by Foljambe; gr. g. d. FAVOURITE, (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. gr. g. d. by Mr. Jacob Smith's bull; gr. gr. gr. g. d. by Mr. Jolly's bull.

James Brown's red bull (bred by Mr. John Thompson of Girlington Hall) got by Mr. William Barker's bull.

Daisy bull (bred by Mr. C. Colling) got by FAVOURITE, dam by PUNCH; g. d. by HUBBACK.

Bolingbroke, red and white, calved Nov. 12, 1788 (bred by Mr. Charles Colling) got by FOLJAMBE, dam Young Strawberry (bred by Mr. Maynard) by Dalton Duke; g. d. FAVOURITE (bred by Mr. Maynard) by Mr. R. Alcock's Bull; gr. g. d. by Mr. Jacob Smith's Bull; gr. gr. g. d. by Jolly's bull.

Foljambe, white with a few red spots, calved in 1787 (bred by C. Colling) got by Richard Barker's bull, dam Haughton, the gr. gr. gr. gr. gr. g. d. of Malcolm (bred by Mr. Alexander Hall) by Hubback; g. d. by a bull of Charles Colling; gr. g. d. by Waistell's bull; gr. gr. g. d. Tripes, bred by C. Pickering.

* See Bailey's Survey of Durham, and Strickland's Survey of Yorkshire, for the British Board of Agriculture.

Gloucester's Pedigree traced in the Herd Book.

R. Alcock's bull, bred by Jackson.

Broken Horn, red roan, calved in 1787 (bred by Mr. R. Colling) got by HUBBACK, dam by HUBBACK; g. d. bred by Mr. Watson.

Grandson of Bolingbroke (bred by C. Colling) got by O'Callaghan's Son of Bolingbroke, dam Old Johanna, by Colling's Lame Bull.

Bartle (bred by Mr. Charge) got by Dalton Duke, dam descended from the STUDLEY WHITE BULL.

William Barker's bull, yellow, red, and white, got by Lakeland's son of the STUDLEY BULL.

Dalton Duke, red and white (bred by Mr. Charge) got by Mr. W. Dobson's bull, dam by the STUDLEY BULL.

Richard Barker's bull, sire of FOLJAMBE, calved in 1784, got by Mr. Hill's red bull, dam by a son of Lakeland's bull. Lakeland's bull by the STUDLEY BULL.

O'Callaghan's Son of Bolingbroke, red and white, got by Bolingbroke, dam a red poll'd Galloway cow.

Lame Bull (bred by Mr. George Best—got by James Brown's White Bull.

Hill's Red Bull, got by Brother of Dalton Duke, dam red cow.

James Brown's White Bull, got by Dalton Duke.

GLOUCESTER,

Imported July 1826, calved February 28, 1825 (bred by J. Whitaker, Esq.) by Frederick, dam ADELA* (bred by Mr. Whitaker) by Orpheus; g. d. ALFREDE† (bred by Mr. Hustler) by ALFRED; gr. g. d. by Windsor; gr. gr. g. d. OLD DAISY‡ (bred by Mr.

* Adela gave with her first calf 24 quarts per day.

† Alfrede gave 24 quarts per day. (*See the Rev. Henry Berry's Pamphlet.*)

‡ Old Daisy gave 32 quarts daily.

C. Colling) by FAVOURITE; gr. gr. gr. g. d. by Punch; gr. gr. gr. gr. g. d. by HUBBACK.

Frederick, roan (bred by Mr. Charge) got by Hulton, dam Orbit, by Comet; g. d. Splendor by Comet: gr. g. d. Flecked Twin by Major; gr. gr. g. d. Red Simmon by Favourite; gr. gr. gr. g. d. Flecked Simmon by Bartle; gr. gr. gr. gr. g. d. Old Simmon (bred by Mr. Charge) descended from the STUDLEY WHITE BULL.*

Orpheus (bred by Mr. Booth) got by Mr. C. Colling's Albion, dam by Lame Bull; g. d. by R. Colling's Suwarrow.

Alfred† (bred by Mr. C. Colling) got by COMET, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE‡ (bred by Mr. Maynard) by R. Alcock's bull.

Windsor (bred by Mr. C. Colling) got by FAVOURITE, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE, by R. Alcock's Bull; gr. gr. g. d. by Smith's Bull; gr. gr. gr. g. d. Strawberry, by Jolly's Bull.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE, g. d. FAVOURITE, by R. Alcock's bull; gr. g. d. by Smith's bull; gr. gr. g. d. by Jolly's bull.

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's bull, dam (from the stock of Sir James

* It is considered expedient to trace the pedigrees of the imported animals on the male side—hence, where the same males occur in subsequent pedigrees, repetition is unavoidable, to make the descent evident, to persons who are not familiar with the subject.

† For Alfred 200 guineas were refused,

‡ Favourite, the dam of Comet.

Pennyman, and these from the stock of Sir Williams St. Quintin, of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

Hulton (bred by Mr. Charge) got by Newton, dam Meteor by COMET; g. d. Best Twin, by FAVOURITE; gr. g. d. Flecked Simmon, by Bartle; gr. gr. g. d. Old Simmon.

COMET (sold for 1000 guineas) red and white roan, calved in 1804 (bred by Mr. C. Colling) got by Favourite, dam Young Phœnix, by FAVOURITE; g. d. Phœnix by Foljambe; gr. g. d. FAVOURITE, (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. gr. g. d. by Mr. Jacob Smith's bull; gr. gr. gr. g. d. by Mr. Jolly's bull.

Major (bred by Mr. C. Colling) got by Comet, dam LADY by Grandson of Bolingbroke; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE (bred by Mr. Maynard) by R. Alcock's bull.

Bartle (bred by Mr. Charge) got by Dalton Duke, dam descended from the STUDLEY WHITE BULL.

STUDLEY WHITE BULL, got by the STUDLEY BULL, bred by Mr. Sharter of Chilton.

Albion, light roan, calved April 18, 1810 (bred by Mr. C. Colling, property of Mr. Booth); got by COMET, dam Beauty by Marske; g. d. Miss Washington.

Lame Bull (bred by Mr. Booth) got by Mr. Booth's Sir Henry, dam Old Gaudy, by Mr. R. Colling's Suwarrow; g. d. by Mr. Booth's Son of the Twin Brother of Ben; gr. g. d. by Twin Brother of Ben.

Suwarrow (bred by Mr. R. Colling) got by Styford, dam by Favourite.

Ben, red, (bred by Mr. R. Colling) got by Punch; dam by Foljambe; g. d. by Hubback.

Foljambe, white with a few red spots, calved in 1787 (bred by C. Colling) got by Richard Barker's bull, dam Haughton (bred by Mr. Alexander Hall) by Hubback; g. d. by a bull of Charles Colling; gr. g. d. by Waistell's bull; gr. gr. g. d. Tripes, bred by C. Pickering.

R. Alcock's bull, bred by Jackson.

Bolingbroke, red and white, calved Nov. 12, 1788 (bred by Mr. Charles Colling) got by FOLJAMBE, dam Young Strawberry (bred by Mr. Maynard) by Dalton Duke; g. d. FAVOURITE (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. g. d. by Mr. Jacob Smith's bull; gr. gr. g. d. by Jolly's bull.

Broken Horn, red roan, calved in 1787 (bred by Mr. R. Colling) got by HUBBACK, dam by HUBBACK; g. d. bred by Mr. Watson.

Newton (bred by Mr. Charge) got by Comet, dam Fanny, by Mr. Charge's Grey bull; g. d. Lady Short-Tail by Johannot; gr. g. d. Second Lady by Favourite; gr. gr. g. d. First Lady by Bartle; gr. gr. gr. g. d. Old Simmon.

Grandson of Bolingbroke (bred by C. Colling) got by O'Callaghan's son of Bolingbroke, dam old Johanna, by Colling's Lame Bull.

Marske, (bred by Mr. C. Colling) got by Favourite.

Sir Henry, red, (bred by Mr. Booth) got by Suwarrow, dam by Mr. Booth's son of the Twin Brother of Ben; g. d. by Twin Brother of Ben.

Twin Brother of Ben, red and white (bred by Mr. R. Colling) got by Punch, dam by Foljambe; gr. g. d. by Hubback.

Styford (bred by Mr. R. Colling) got by Favourite, dam by Punch; g. d. by Foljambe; gr. g. d. by Hubback.

Richard Barker's bull, sire of FOLJAMBE, calved in 1784, got by Mr. Hill's red bull, dam by a son of Lakeland's bull. Lakeland's bull by the STUDLEY BULL.

Dalton Duke, red and white (bred by Mr. Charge) got by Mr. W. Dobson's bull, dam by the STUDLEY BULL.

Grey Bull (bred by Mr. Charge) got by FAVOURITE, dam Fleck'd Lady, by Young Bartle; g. d. First Lady, by Bartle; gr. g. d. Old Simmon, descended from the STUDLEY BULL.

O'Callaghan's Son of Bolingbroke, red and white, got by Bolingbroke, dam a red poll'd Galloway cow.

Red Bull, got by brother of Dalton Duke, dam red cow.

Johannot (bred by C. Colling) got by Mr. C. Colling's Cupid.

Cupid, calved in 1799 (bred by Mr. C. Colling) got by Mr. C. Colling's Son of Favourite, dam Venus by Ben; g. d. Phœnix by Foljambe; gr. g. d. Favourite (bred by Mr. Maynard) by Alcock's bull.

BOLIVAR,

Imported Nov. 1826; calved May 5, 1825 (bred by J. Whitaker, Esq.) got by FREDERICK; dam Sweetheart by Hermit; g. d. Buxom by Lawnsleeves; gr. g. d. Brampton by FAVOURITE;* gr. gr. g. d. Bright Eyes by FAVOURITE; gr. gr. gr. g. d. Old Bright Eyes by FAVOURITE; gr. gr. gr. gr. g. d. by FAVOURITE; gr. gr. gr. gr. gr. g. d. by Punch; gr. gr. gr. gr. gr. g. d. by Hubback; gr. gr. gr. gr. gr. gr. gr. g. d. by SNOWDEN'S BULL; gr. gr. gr. gr. gr.

* Sire of Comet.

gr. gr. gr. g. d. by Masterman's bull; gr. gr. gr. gr. gr. gr. gr. gr. g. d. by Waistell's bull; Waistell's bull by Masterman's bull; Masterman's bull by the STUDLEY BULL.

Frederick, roan (bred by Mr. Charge) got by Hulton, dam Orbit by Comet; g. d. Splendour by Comet; gr. g. d. Flecked Twin by Major; gr. gr. g. d. Red Simmon by Favourite; gr. gr. gr. g. d. Flecked Simmon by Bartle; gr. gr. gr. gr. g. d. Old Simmon (bred by Mr. Charge) descended from the STUDLEY WHITE BULL.

Hermit, roan (bred by Mr. Baker) got by Lawnsleeves, dam Manuscript by Simon; g. d. by DAISY; gr. g. d. by Duke; gr. gr. g. d. by Bolingbroke.

Lawnsleeves, got by C. Colling's Surplice; dam by George; g. d. by Simon, out of Mr. Smith's old cow.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE; g. d. FAVOURITE, by R. Alcock's bull; gr. g. d. by Smith's bull; gr. gr. g. d. by Jolly's bull.

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's bull, dam (from the stock of Sir James Pennyman, and these from the stock of Sir William St. Quintin, of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

Snowden's bull, the sire of Hubback, bred by Mr. George Snowden, got by Robson's bull.

Masterman's bull, by the STUDLEY BULL.

Waistell's bull by Masterman's bull.

Simon, got by FAVOURITE, dam by Punch; g. d. by Bolingbroke.

Daisy bull (bred by Mr. C. Colling) got by FAVOURITE, dam by Punch; g. d. by HUBBACK.

Duke by COMET, dam DUCHESS* by FAVOURITE; g. d. by DAISY; gr. g. d. by FAVOURITE; gr. gr. g. d. by Hubback; gr. gr. gr. g. d. by JAMES BROWN'S RED BULL.

Bolingbroke, red and white, calved Nov. 12, 1788 (bred by Mr. Charles Colling) got by FOLJAMBE, dam Young Strawberry (bred by Mr. Maynard) by Dalton Duke; g. d. FAVOURITE (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. g. d. by Mr. Jacob Smith's bull; gr. gr. g. d. by Jolly's bull.

Surplice (bred by C. Colling) got by FAVOURITE, g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE, by Alcock's bull.

George (bred by Mr. C. Colling) got by COMET, dam LADY by Grandson of Bolingbroke; g. d. PHŒNIX by Foljambe; gr. g. d. FAVOURITE (bred by Mr. Maynard) by Alcock's bull.

COMET (sold for 1000 guineas) red and white roan, calved in 1804 (bred by Mr. C. Colling) got by Favourite, dam Young Phœnix, by FAVOURITE; g. d. Phœnix by Foljambe; gr. g. d. FAVOURITE, (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. gr. g. d. by Mr. Jacob Smith's bull; gr. gr. gr. g. d. by Mr. Jolly's bull.

James Brown's red bull (bred by Mr. John Thompson of Girlington Hall) got by Mr. William Barker's bull.

* "From the Daisys, Duchesses and Wildairs, the best milkers have descended."

Foljambe, white with a few red spots, calved in 1787 (bred by C. Colling) got by Richard Barker's bull, dam Haughton, the gr. gr. gr. gr. gr. g. d. of Malcolm (bred by Mr. Alexander Hall) by Hubback; g. d. by a bull of Charles Colling; gr. g. d. by Waistell's bull; gr. gr. g. d. Tripes, bred by C. Pickering.

R. Alcock's bull, bred by Jackson.

Grandson of Bolingbroke (bred by C. Colling) got by O'Callaghan's Son of Bolingbroke, dam Old Johanna, by Colling's Lame Bull.

LADY BETTY,

Imported in 1825 (bred by J. Whitaker, Esq.) calved in 1823; got by Alonzo, dam WILDAIR,* by R. Colling's Meteor; g. d. by Yarborough; gr. g. d. by Styford; gr. gr. g. d. by Hutton's bull, from JAMES BROWN'S BULL.

Alonzo, calved in 1821, got by Bates' Cleveland, dam RED DAISY* (bred by Mr. Hustler) by R. Colling's Major; g. d. by Windsor; gr. g. d. OLD DAISY by FAVOURITE; gr. gr. g. d. by PUNCH; gr. gr. gr. g. d. by HUBBACK.

Meteor (bred by R. Colling) by COMET, dam Diana by FAVOURITE; g. d. OLD WILDAIR by FAVOURITE; gr. g. d. by Ben; gr. gr. g. d. by HUBBACK; gr. gr. gr. g. d. by SNOWDEN'S BULL; gr. gr. gr. gr. g. d. by Sir James Pennyman's bull.

Yarborough (bred by Mr. C. Colling) got by Cupid, dam by FAVOURITE; g. d. by HUBBACK.

* Wildair and Red Daisy gave *each* 32 quarts per day. (*See the Rev. Henry Berry's Pamphlet.*)

Styford (bred by Mr. R. Colling) got by Favourite, dam by Punch; g. d. by Foljambe; gr. g. d. by Hubback.

Hutton's bull, got by a son of Bolingbroke.

Cleveland, red and white, calved in 1819 (bred by, and the property of Mr. T. Bates) got by Ketton the Third, dam DUCHESS THE FIRST (bred by Mr. Colling) by COMET, g. d. by FAVOURITE; gr. g. d. by DAISY BULL; gr. gr. g. d. by FAVOURITE; gr. gr. gr. g. d. by HUBBACK; gr. gr. gr. gr. g. d. by James Brown's red bull.

Major, red and white, calved in 1813 (bred by Mr. R. Colling) got by Wellington, dam by Phenomenon; g. d. by FAVOURITE; gr. g. d. by FAVOURITE.

Windsor (bred by Mr. C. Colling) got by FAVOURITE, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE, by R. Alcock's bull; gr. gr. g. d. by Smith's bull; gr. gr. gr. g. d. Strawberry by Jolly's bull.

Favourite, the sire of Comet, by Bolingbroke; dam PHŒNIX by FOLJAMBE, g. d. FAVOURITE, by R. Alcock's bull; gr. g. d. by Smith's bull; gr. gr. g. d. by Jolly's bull.

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's bull, dam (from the stock of Sir James Pennyman, and these from the stock of Sir William St. Quintin of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

COMET (sold for 1000 guineas) red and white roan, calved in

1804 (bred by Mr. C. Colling) got by Favourite, dam Young Phœnix, by FAVOURITE; g. d. Phœnix by Foljambe; gr. g. d. FAVOURITE, (bred by Mr. Maynard) by Mr. R. Alcock's bull; gr. gr. g. d. by Mr. Jacob Smith's bull; gr. gr. gr. g. d. by Mr. Jolly's bull.

Ben, red, (bred by Mr. R. Colling) got by Punch; dam by Foljambe; g. d. by Hubback.

Snowden's bull, got by Robson's bull; Robson's bull by Masterman's bull; Masterman's bull by the STUDLEY BULL.

Cupid, calved in 1799 (bred by Mr. C. Colling) got by Mr. C. Colling's Son of Favourite, dam Venus by Ben; g. d. Phœnix by Foljambe; gr. g. d. Favourite (bred by Mr. Maynard) by Alcock's bull.

O'Callaghan's Son of Bolingbroke, red and white, got by Bolingbroke, dam a red poll'd Galloway cow.

Ketton the Third, red and white (bred by Mr. Bates) got by Ketton the Second, dam DUCHESS the Third, by Ketton the First; g. d. DUCHESS the First (bred by Mr. C. Colling) by COMET; gr. g. d. by FAVOURITE; gr. gr. g. d. by DAISY BULL; gr. gr. gr. g. d. by FAVOURITE; gr. gr. gr. gr. g. d. by HUBBACK; gr. gr. gr. gr. gr. g. d. by Mr. James Brown's red bull.

Daisy bull (bred by Mr. C. Colling) got by FAVOURITE, dam by PUNCH; g. d. by HUBBACK.

James Brown's red bull (bred by Mr. John Thompson of Girlington Hall) got by Mr. William Barker's bull.

Wellington, roan (bred by Mr. R. Colling) got by COMET; dam WILDAIR, by FAVOURITE; g. d. by Ben; gr.

g. d. by HUBBACK; gr. gr. g. d. by SNOWDEN'S BULL, the sire of HUBBACK; gr. gr. gr. g. d. by Sir JAMES PENNYMAN'S BULL.

Phenomenon (bred by Mr. R. Colling) got by FAVOURITE, dam by Ben; g. d. by HUBBACK; gr. g. d. by SNOWDEN'S BULL; gr. gr. g. d. by Sir James Pennyman's bull.

William Robson's bull by Mr. James Masterman's bull; Masterman's bull by the STUDLEY BULL.

Ketton the Second, got by Ketton the First, dam by Grandson of Favourite; g. d. by Mr. James Brown's red bull.

Ketton the First, got by FAVOURITE; d. (g. d. of OLD DUCHESS) by the Daisy Bull (by FAVOURITE) g. d. by FAVOURITE; gr. g. d. by HUBBACK; gr. gr. g. d. by Mr. James Brown's red bull.

BELINA,

Imported in 1825, (bred by J. Whitaker, Esq.) calved in 1822; got by Barmpton, dam by Son of Wellington, out of Charlotte; g. d. by Laird, &c.

Barmpton (bred by Mr. R. Colling) got by George, dam Moss Rose by FAVOURITE; g. d. Red Rose by FAVOURITE; gr. g. d. by Punch; gr. gr. g. d. by FOLJAMBE; gr. gr. gr. g. d. by HUBBACK.

Wellington, roan (bred by Mr. R. Colling) got by COMET, dam WILDAIR, by FAVOURITE; g. d. by Ben; gr. g. d. by HUBBACK; gr. gr. g. d. by SNOWDEN'S BULL, the sire of HUBBACK; gr. gr. gr. g. d. by Sir JAMES PENNYMAN'S BULL.

Laird, by Chieftain, dam OLD DUCHESS by DAISY BULL; g. d. by FAVOURITE; gr. g. d. by HUBBACK; gr. gr. g. d. by BROWN'S OLD RED BULL.

Yorkshire Belle's Pedigree traced in the Herd Book.

George (bred by Mr. R. Colling) got by FAVOURITE, dam Lady Grace by FAVOURITE.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE, g. d. FAVOURITE, by R. Alcock's bull; gr. g. d. by Smith's bull; gr. gr. g. d. by Jolly's bull.

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Foljambe, white with a few red spots, calved in 1787 (bred by C. Colling) got by Richard Barker's bull, dam Haughton, (bred by Mr. Alexander Hall) by Hubback; g. d. by a bull of Charles Colling; gr. g. d. by Waistell's bull; gr. gr. g. d. Tripes, bred by C. Pickering.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's bull, dam (from the stock of Sir James Pennyman, and these from the stock of Sir William St. Quintin, of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

Chieftain (bred by Mr. Bates) got by Daisy bull.

Daisy bull (bred by Mr. C. Colling) got by FAVOURITE, dam by Punch; g. d. by HUBBACK.

James Brown's red bull (bred by Mr. John Thompson of Girlington Hall) got by Mr. William Barker's bull.

YORKSHIRE BELLE,*

Imported in 1825 (bred by J. Whitaker, Esq.) calved in 1824; by Frederick, dam Yarm,† by Symmetry;

* Yorkshire Belle gained the prize for yearlings at Otley Show, England.

† Yarm gave 24 quarts per day.

(*See the Rev. Henry Berry's Pamphlet.*)

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g. d. by R. Colling's Meteor; gr. g. d. by Windsor; gr. gr. g. d by Grey bull.

Frederick, roan (bred by Mr. Charge) got by Hulton, dam Orbit by Comet; g. d. Splendour by Comet; gr. g. d. Flecked Twin by Major; gr. gr. g. d. Red Simmon by Favourite; gr. gr. gr. g. d. Flecked Simmon by Bartle; gr. gr. gr. gr. g. d. Old Simmon (bred by Mr. Charge) descended from the STUDLEY WHITE BULL.

Meteor (bred by R. Colling) got by COMET, dam Diana by FAVOURITE; g. d. OLD WILDAIR by FAVOURITE; gr. g. d. by Ben; gr. gr. g. d. by Hubback; gr. gr. gr. g. d. by Snowden's bull; gr. gr. gr. gr. g. d. by Sir James Pennyman's bull.

Windsor (bred by Mr. C. Colling) got by FAVOURITE, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE, by R. Alcock's Bull; gr. gr. g. d. by Smith's Bull; gr. gr. gr. g. d. Strawberry, by Jolly's Bull.

Grey Bull, got by White bull, dam by Punch; g. d. by Foljambe; gr. g. d. by Hubback.

White Bull, got by Favourite, dam by Favourite.

See Gloucester's pedigree, for

Hulton, the grandsire,
Comet, the gr. g. sire, and gr. gr. g. sire,
Major, the gr. gr. gr. g. sire,
Favourite, the gr. gr. gr. gr. g. sire,
Bartle, the gr. gr. gr. gr. gr. g. sire,
} of Yorkshire Belle.

DESDEMONA,

Imported in 1825 (bred by J. Whitaker, Esq.) calved in 1824; by Frederick, dam Delia by Cleveland; g.

d. RED DAISY* by Major; gr. g. d. by Windsor; gr. gr. g. d. by FAVOURITE; gr. gr. gr. g. d. by Punch; gr. gr. gr. gr. g. d. by HUBBACK.

Frederick, roan (bred by Mr. Charge) got by Hulton, dam Orbit, by Comet; g. d. Splendor by Comet: gr. g. d. Flecked Twin by Major; gr. gr. g. d. Red Simmon by Favourite; gr. gr. gr. g. d. Flecked Simmon by Bartle; gr. gr. gr. gr. g. d. Old Simmon (bred by Mr. Charge) descended from the STUDLEY WHITE BULL.

Cleveland, red and white, calved in 1819 (bred by and the property of Mr. T. Bates) got by Ketton the Third, dam DUCHESS the First (bred by Mr. C. Colling) by COMET, g. d. by FAVOURITE; gr. g. d. by DAISY BULL; gr. gr. g. d. by FAVOURITE; gr. gr. gr. g. d. by HUBBACK; gr. gr. gr. gr. g. d. by Mr. James Brown's red bull.

Major, red and white, calved in 1813 (bred by Mr. R. Colling) got by Wellington, dam by Phenomenon; g. d. by FAVOURITE; gr. g. d. by FAVOURITE.

Windsor (bred by Mr. C. Colling) got by FAVOURITE, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE by R. Alcock's bull; gr. gr. g. d. by Smith's bull; gr. gr. gr. g. d. Strawberry, by Jolly's bull.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE; g. d. FAVOURITE, by R. Alcock's bull; gr. g. d. by Smith's bull; gr. gr. g. d. by Jolly's bull.

* Red Daisy gave 32 quarts per day. (*See the Rev. Henry Berry's Pamphlet.*)

Punch (bred by Mr. R. Colling) got by Broken Horn, dam by Broken Horn; g. d. bred by Mr. Best.

Hubback, calved in 1777 (bred by Mr. John Hunter) got by Snowden's bull, dam (from the stock of Sir James Pennyman, and these from the stock of Sir William St. Quintin, of Scampston) by a bull of Mr. Banks of Hurworth; g. d. bought of Mr. Stephenson of Ketton.

See Gloucester's pedigree, for
Hulton, the grandsire,
Comet, the gr. g. sire, and gr. gr. g. sire,
Major, the gr. gr. gr. g. sire,
Favourite, the gr. gr. gr. gr. g. sire,
Bartle, the gr. gr. gr. gr. gr. g. sire,
} of Desdemona.

VOLANTE,

Imported in July 1826 (bred by J. Whitaker, Esq.) calved February, 1825; got by Frederick, dam Viola* by His Grace; g. d. Venus† (bred by Mr. Charge) by Charles Colling's Major; gr. g. d. Venus by Grey bull; gr. gr. g. d. by FAVOURITE.

Frederick, roan (bred by Mr. Charge) got by Hulton, dam Orbit by Comet; g. d. Splendor by Comet; gr. g. d. Fleeked Twin by Major; gr. gr. g. d. Red Simmon by Favourite; gr. gr. gr. g. d. Flecked Simmon by Bartle; gr. gr. gr. gr. g. d. Old Simmon (bred by Mr. Charge) descended from the STUDLEY WHITE BULL.

His Grace (bred by Mr. Bates) got by Ketton the Second, dam DUCHESS the Second, by Ketton the First, g.

* Viola took the prize at Otley Show, England.

† Venus, when sixteen years old, gave 26 quarts per day. (*See the Rev. Henry Berry's Pamphlet.*)

d. DUCHESS the First (bred by Mr. C. Colling) by COMET; gr. g. d. by FAVOURITE; gr. gr. g. d. by Daisy Bull; gr. gr. gr. g. d. by FAVOURITE; gr. gr. gr. gr. g. d. by HUBBACK; gr. gr. gr. gr. gr. g. d. by JAMES BROWN'S RED BULL.

Major (bred by Mr. C. Colling) got by Comet, dam LADY, by Grandson of Bolingbroke; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE (bred by Mr. Maynard) by R. Alcock's Bull.

Grey Bull (bred by Mr. Charge) got by FAVOURITE, dam Fleck'd Lady, by Young Bartle; g. d. First Lady, by Bartle; gr. g. d. Old Simmon, descended from the STUDLEY BULL.

Favourite, the sire of Comet, by Bolingbroke, dam PHŒNIX by FOLJAMBE; g. d. FAVOURITE, by R. Alcock's Bull; gr. g. d. by Smith's Bull; gr. gr. g. d. by Jolly's Bull.

See Gloucester's pedigree for

Hulton, the grandsire,
Comet, the gr. g. sire, and gr. gr. g. sire,
Major, the gr. gr. gr. g. sire,
Favourite, the gr. gr. gr. gr. g. sire,
Bartle, the gr. gr. gr. gr. gr. g. sire,
} of Volante.

ANNABELLA,

Imported in July, 1826, got by Peter (bred by Mr. Booth) dam Attraction (bred by Col. Trotter) by Pyramus; g. d. Aurora by COMET, gr. g. d. Marcella by Son of FAVOURITE; gr. gr. g. d. by Son of FAVOURITE; gr. gr. gr. g. d. Hollon.

Peter (bred by Mr. Booth) got by R. Colling's Pilot, dam by Marshal Beresford; g. d. by Shakspeare; gr. g. d. by Old Easby; gr. gr. g. d. by Suwarrow.

Pyramus (bred by Col. Trotter) got by COMET, dam Anna Maria, by Grandson of Favourite; g. d. Strawberry by Son of Favourite; gr. g. d. Hollon.

COMET. (See Malcolm's pedigree.)

Favourite. (See Malcolm's pedigree.)

Pilot, red and white, calved in 1817 or 18 (bred by Mr. R. Colling) got by Major; dam Red Rose by FAVOURITE; g. d. by Punch; gr. g. d. by FOLJAMBE; gr. gr. g. d. by Hubback.

Marshal Beresford (bred by Major Bower) got by Comet, dam DAISY; (bred by Mr. C. Colling) g. d. OLD DAISY; gr. g. d. by Punch; gr. gr. g. d. by HUBBACK.

Shakspeare (bred by Mr. Booth) got by Easby; dam by Mr. Colling's Suwarrow; g. d. by Mr. Booth's Son of the Twin Brother of Ben; gr. g. d. by Twin Brother of Ben.

Easby, roan (bred by Mr. Booth) got by Mr. Colling's Suwarrow, dam Fareholme, by Mr. Booth's Son of the Twin Brother of Ben; g. d. by Twin Brother of Ben; gr. g. d. by Twin Brother of Ben.

Suwarrow. (See Gloucester's pedigree.)

Major. (See Betty's pedigree.)

Wellington. (See Betty's pedigree.)

Punch. (See Malcolm's pedigree.)

Hubback. (See Malcolm's pedigree.)

Twin Brother of Ben. (See Gloucester's pedigree.)

Ben. (See Gloucester's pedigree.)

Snowden's bull, the sire of Hubback (bred by Mr. George Snowden) got by Mr. William Robson's bull.

Robson's bull by Masterman's bull.

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Masterman's bull by the Studley bull (bred by Mr. Sharter of Chilton).

STATELY,

Imported in 1822, calved in 1821 (bred by Mr. Wetherell) got by North Star, dam Laura by Denton; g. d. Selina, by Wellington; gr. g. d. by Danby.

North Star, roan (bred by Mr. Wetherell) got by COMET, dam Lady (bred by Mr. Spours) by Baronet (bred by Mr. Mason); g. d. by Cripple; gr. g. d. by Irishman.

Denton (bred by Mr. Wetherell) got by COMET, dam Young Red Rose, by St. John; g. d. by Trunnell; gr. g. d. by Danby.

Wellington (bred by Mr. Wetherell) got by St. John, dam by Trunnell; g. d. by Danby.

Danby (bred by Mr. Wetherell) got by Paddock, dam by White bull.

Comet. (See Malcolm's pedigree.)

Baronet, roan, got by Chilton, dam Lydia by Favourite; g. d. Nell by Mr. Mason's white bull; gr. g. d. Fortune (bred by Mr. C. Colling) by Bolingbroke; gr. gr. g. d. by Foljambe; gr. gr. gr. g. d. by Hubback; gr. gr. gr. gr. g. d. bred by Mr. Maynard.

Cripple, red and white, (bred by Mr. Mason) got by Irishman, dam Fortune, by Bolingbroke; g. d. by FOLJAMBE; gr. g. d. by HUBBACK; gr. gr. g. d. bred by Mr. Maynard.

Irishman (bred by Mr. Mason) got by Styford, dam Fortune (bred by Mr. C. Colling) by Bolingbroke; g. d. by FOLJAMBE; gr. g. d. by HUBBACK; gr. gr. g. d. bred by Mr. Maynard.

St. John, roan (bred by Mr. Mason) got by FAVOURITE; dam Fortune, (bred by Mr. C. Colling) by Bolingbroke; g. d. by Foljambe; gr. g. d. by HUBBACK; gr. gr. g. d. bred by Mr. Maynard.

Trunnell (bred by Mr. Mason) got by FAVOURITE, dam Fortune by Bolingbroke; g. d. by FOLJAMBE; gr. g. d. by HUBBACK; gr. gr. g. d. bred by Mr. Maynard.

Paddock (bred by Mr. James Brown) got by Mr. Robert Charge's bull (descended from the Studley breed), dam Mr. James Brown's red cow.

White bull. (See Malcolm's pedigree.)

Chilton, roan, (bred by Mr. Mason) got by FAVOURITE, dam Lily by FAVOURITE; g. d. Miss LAX (bred by Mr. Maynard), by Dalton Duke; gr. g. d. Lady Maynard, by Alcock's bull.

Favourite. (See Malcolm's pedigree.)

Mr. Mason's white bull (bred by Mr. C. Colling) got by FAVOURITE, dam FAVOURITE (bred by Mr. Maynard) by Alcock's bull; g. d. by Smith's bull; gr. g. d. by Jolly's bull.

Bolingbroke. (See Malcolm's pedigree.)

Foljambe. (See Malcolm's pedigree.)

Hubback. (See Malcolm's pedigree.)

Studley bull. (See Gloucester's pedigree.)

Simon. (See Bolivar's pedigree).

Dalton Duke. (See Malcolm's pedigree.)

R. Alcock's bull. (See Malcolm's pedigree.)

STATELY'S OFFSPRING.

Defiance, bull, calved in 1824, by Bishop, dam Stately.

Raymond, white and roan, bull, calved in 1825, by Wye Comet, dam Stately.

Pocahontas, white and roan, heifer, calved in 1826, by Malcolm, dam Stately.

VIRGINIA,

Calved in 1821, begotten by General, dam Rosemary (bred by J. C. Curwen, Esq.) by Flash; g. d. Red Rose by Petrarch; gr. g. d. by Alexander; gr. gr. g. d. by Traveller; gr. gr. gr. g. d. by Son of Bolingbroke.

General (bred by General Simson) got by Young Star; dam Queen by Bruce; g. d. Empress by WESTERN COMET; gr. g. d. Bright Eyes by Marquis; gr. gr. g. d. by Simon; gr. gr. gr. g. d. by Traveller; gr. gr. gr. gr. g. d. by Colling's Lame bull.

Flash (bred by Mr. Seymour) by Mr. Colling's Sir Dimple; dam Carnation (bred by Mr. Seymour) by Cripple; g. d. Moss Rose by Henry; gr. g. d. Rosebud by Misfortune; gr. gr. g. d. Red Rose by FAVOURITE; gr. gr. gr. g. d. by Bolingbroke.

Petrarch (bred by Mr. Charles Colling) by Comet, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE by Alcock's bull; gr. gr. g. d. by Smith's bull; gr. gr. gr. g. d. Strawberry, by Jolly's bull.

Alexander (bred by Mr. Charles Colling) by FAVOURITE.

Traveller, got by Bolingbroke, dam Old Blossom.

Young Star, got by C. Colling's North Star, dam Mary (bred by C. Colling) by FAVOURITE; g. d. Venus by Ben.

Bruce, got by Jupiter, dam Rola.

Western Comet. (See Malcolm's pedigree.)

Marquis, got by Petrarch, dam by DAISY BULL; g. d. by FAVOURITE; gr. g. d. by HUBBACK.

Simon. (See Bolivar's pedigree.)

Colling's Lame bull. (See Malcolm's pedigree.)

Sir Dimple (bred by Mr. C. Colling) got by COMET, dam DAISY, by Grandson of Favourite; g. d. OLD DAISY by FAVOURITE; gr. g. d. by PUNCH; gr. gr. g. d. by HUBBACK.

Cripple (bred by Mr. Mason) got by Irishman, dam Fortune (bred by Mr. C. Colling) by Bolingbroke; g. d. by FOLJAMBE; gr. g. d. by HUBBACK; gr. gr. g. d. bred by Mr. Maynard.

Henry (bred by Mr. Mason) got by St. John, dam Dandy by FAVOURITE; g. d. Lily by FAVOURITE; gr. g. d. Miss Lax (bred by Mr. Maynard) by Dalton Duke; gr. gr. g. d. Lady Maynard, by Mr. R. Alcock's bull.

Misfortune, got by FAVOURITE.

Favourite. (See Malcolm's pedigree.)

Bolingbroke. (See Malcolm's pedigree.)

Comet. (See Malcolm's pedigree.)

Ben. (See Gloucester's pedigree.)

Foljambe. (See Malcolm's pedigree.)

Alcock's bull. (See Malcolm's pedigree.)

North Star (bred by Mr. C. Colling) got by FAVOURITE, dam YOUNG PHŒNIX by FAVOURITE; g. d. PHŒNIX by FOLJAMBE; gr. g. d. FAVOURITE (bred by Mr. Maynard) by Alcock's bull.

Petrarch (bred by Mr. C. Colling) got by COMET, dam VENUS by Ben; g. d. PHŒNIX by FOLJAMBE, gr. g. d. FAVOURITE (bred by Mr. Maynard) by Alcock's bull.

Daisy bull. (See Malcolm's pedigree.)

Hubback. (See Malcolm's pedigree.)

VIRGINIA'S OFFSPRING.

Monk, red roan, bull, calved in 1824, by Bishop, dam Virginia.

Ohio, white and red roan, bull, calved in 1825, by Wye Comet, dam Virginia.

Osage, light roan, bull, calved in 1826, by Wye Comet, dam Virginia.

SHEPHERDESS,

Imported in 1822; (bred by Mr. Champion) got by Magnet, dam by Prince; g. d. by a bull of the Duke of Leeds.

Magnet, got by Warrior, dam Magdalene (bred by Mr. C. Colling) by COMET; g. d. by Washington.

SHEPERDESS' OFFSPRING.

Blyth, bull, calved in 1824, by Champion, dam Shepherdess.

Romp, heifer, calved in 1825, by Bishop, dam Shepherdess.

Florian, red and white, bull, calved in 1826, by Wye Comet, dam Shepherdess.

BURLEY,

Calved in February, 1826, white (bred by Mr. Powel) begotten in England by Frederick, dam Belina by Barmpton (bred by R. Colling) g. d. by Son of Wellington out of Charlotte; gr. g. d. by Laird.

Barmpton, roan, calved in 1810 (bred by Mr. R. Colling) got by Mr. R. Colling's George, dam Moss Rose by FAVOURITE; g. d. Red Rose by FAVOURITE; gr. g. d. by Punch; gr. gr. g. d. by FOLJAMBE; gr. gr. gr. g. d. by HUBBACK.

George (bred by Mr. R. Colling) got by FAVOURITE, dam Lady Grace by FAVOURITE.

Chieftain (bred by Mr. T. Bates) got by Daisy bull.

For *Frederick*, *Wellington*, *Laird*, *Favourite*, *Punch*,

Foljambe, Hubback, James Brown's red bull, and Daisy, see the foregoing pedigrees.

FAIRY,

Calved in 1820, got by Young Denton, dam Prize by Young Denton, g. d. Buckhorn.

Young Denton, got by Denton, dam by Baronet, g. d. by Cripple; gr. g. d. by Irishman.

Denton, got by Comet; g. d. by St. John; gr. g. d. by Old Danby.

Comet, Fairy's gr. g. sire. (See Bolivar's pedigree.)

FAIRY'S OFFSPRING.

Coquette, white, heifer, calved in 1824, by Bishop, dam Fairy.

Margaret, dark roan, heifer, calved in 1825, by Bishop, dam Fairy.

Richard, light roan, bull, calved in 1826, by Wye Comet, dam Fairy.

James, white, bull, calved in 1826, by Malcolm, dam Fairy.

Daphne, dark roan, heifer, calved in 1826, by Wye Comet, dam Coquette.

BISHOP,

Now possessed by J. Worth, Esq. (bred by Mr. Curwen in England, got by Wellington, dam Arbutus (bred by Mr. Gibson) by Harlequin; g. d. by Yarborough; gr. g. d. by Duke; gr. gr. g. d. by Jobling's Traveller; gr. gr. gr. g. d. by Bolingbroke.

WYE COMET,

(Now possessed by Henry Watson, Esq. Conn.) begotten in England, by Blaize, dam White Rose by Warrior; g. d. by Mr. Mason's Charles; gr. g. d. by Prince; gr. gr. g. d. by Neswick.

REPLY

TO

Col. Pickering's Attack

UPON

A PENNSYLVANIA FARMER.

PHILADELPHIA:

CLARK & RASER, PRINTERS, 33 CARTER'S ALLEY.

1825.

REPLY

TO

COLONEL PICKERING'S ATTACK.

A REVIEW of the Memoirs of the Pennsylvania Agricultural Society, had appeared in the Massachusetts Journal, with copious extracts and the subjoined remarks.

Col. Pickering, fancying that the Pennsylvania Society had controverted opinions, of which they had never heard, conceived himself bound, to introduce me as their officer, with peculiar gentleness to the agricultural world*—elevating me to distinction—conferring consequence on me to give the pleasures of contention to him, who revels in conflict, and regards not defeat.

He gave quotation on quotation, details without end, referring to books which are obsolete, to authorities which he did not understand—yet to indulgence he has claim, as he declares he has not read much—happy to obtain the more credit, for genius in writing so well.

He had filled many quarto pages, to which I replied without a feeling of asperity, or a personal remark.

The Editors of the Massachusetts Journal, "his friends," having been cited in support of his objects and plans, took the first opportunity of confuting his assertions upon the only points, in which I felt concerned—giving him compliments upon his opportunities—wholesome admonitions upon his course, condemning his mode of comparison as "not precisely correct"—agreeing with him in general remarks, against which, they are so general, no man who is sane would attempt to contend.

A new series of essays are issued, with comments on my

* "I have the pleasure of knowing Mr. Powel, and have been gratified in seeing his signal display of talent and energy, in applying his ample means to improve the agriculture of our country."—*Col. Pickering's No.* 3.

purse*—noticing my pedigree, which even he cannot condemn—introducing females of my family—fragments of history—Norman kings—antique researches and Alderney bulls —with plaudits on our friend Haines—attributing to me motives, which no man who knows me could suspect—which no man who knows him will believe—ascribing to me blunders in writing, worthy of himself, in language entirely his own.

I am dragged from my peaceful pursuits as a farmer, by a man, whom I have neither had opportunity nor desire to offend. I am coerced to reply.

From the Massachusetts Agricultural Journal.

Memoirs of the Pennsylvania Agricultural Society.

"A very interesting little volume under this title, has been recently published by the intelligent, indefatigable and manly editor of the American Farmer." * * * * * * * * *

"The book is beautifully printed, and the plates are superior to any thing of the sort in any agricultural work. They must have been expensive. It is not our purpose to review this work in the modern style of reviews, which is to insert the title page, and then to proceed to a dissertation, in which nothing or very little is said of the work itself. Our purpose is to recommend it to the notice of the reading class of farmers, by extracts, not so copious as to injure the sale of the work, but just enough to enable our readers to appreciate its merits. We make no apology for preferring these extracts to original matter. We hold very cheap that ridiculous jealousy of the editors of public journals, which leads them to reject an excellent article, which has appeared in another work, and to insert one much inferior. The object of all printed works should be the diffusion of knowledge, and that object should not be defeated by pride or jealousy. If Maryland or Pennsylvania should furnish sounder remarks than Massachusetts, there is no reason why the readers in Massachusetts should not see them."

* * * * * * * * * *

"We shall begin with some remarks of John Hare Powel, Esq. on the various breeds of Horned Cattle. This is a topic peculiarly interesting to New England. This must be our agricultural staple to the end of time. Horned cattle, sheep and swine, must constitute the great sources of revenue to our farmers. We give no opinion as to the soundness of Mr. Powel's opinions; we mean to hold an even balance between all the contending parties. This,

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* "I am not the adopted heir to a great estate." * * * *
Col. Pickering.

HOWEVER, WE OWE TO MR. POWEL TO SAY, IN ZEAL, PUBLIC SPIRIT, INDUSTRY AND EXPERIENCE, HE YIELDS TO NO MAN.

"HE IS FRANK, AND SOMETIMES STRONG IN THE EXPRESSION OF HIS SENTIMENTS, BUT HE ALWAYS STATES THE GROUNDS ON WHICH THEY ARE FORMED."

* * * * * * * * *

Extract from a Letter to Jonathan Roberts, Esq. President of the Pennsylvania Agricultural Society.

"My situation as the Recording Secretary, made me privy to every transaction connected with the arrangement and publication of the book. It had proceeded to a considerable extent, and was to have been paid for out of Mr. Powel's private purse. * * * * I can say without the least hesitation, that no extract was made or abridged, nor was any paper rejected, to promote any opinion of his own, *nor did he designate* the point at which the selections were *to stop.* * * * * I live near to his farm, and am in habits of intimacy and frequent intercourse. I have seen his accounts of purchases and sales, and can say with perfect precision, that so far from his having ever derived profit, or had a view to profit, from his cattle, it is within my knowledge, that his expenditures have so far exceeded the returns, that for many years the rent of his farm, and the wages of his labourers, have been sunk. His bulls have been repeatedly stationed in different counties, yet no charge has ever been made for their services." * * * *

(Signed) JOHN P. MILNOR, *Recording Sec'ry.*

Colonel Pickering's Letter, No. 6, assailing Mr. Powel.

"The extracts from Lawrence, in the Repository, were made by Dr. Dexter, when President of the Massachusetts Agricultural Society; and I cannot doubt they were correctly made. He was not a dealer in live-stock, *nor had any favourite race to recommend above, and to the exclusion of all others;* nor any conceivable motive, by alterations or omissions, to keep out of sight any information which he thought might be useful to his fellow citizens."—COL. PICKERING.

MR. POWEL'S REPLY.

WHEN Colonel Pickering ushered me into notice, blandly saying I know Mr. Powel, I might have rejoined, to all men Colonel Pickering is well known. I trembled, yet hoped I might escape the vehemence of his invective, and the restlessness of his quill, as I could conceive no subject of col-

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lision, nor source of discontent, which could between this prominent statesman, and a farmer arise. In truth, I was unconscious of having differed from him on any point, which could be discussed in a farmer's paper, having little regarded what he had written, and but in one instance, having had the happiness to hear, what he thought or had collated, in an address at a Brighton show. Upon my conscience I can aver, that although I might on that occasion have been enlightened, by a disquisition so elaborate and sagaciously derived, I must lament my attention not having been sufficiently attracted, and my having been led off by some ladies, who were disturbed at the interesting moment, when he was repeating the process of * * * * * *

Having called forth this ancient senator's ire—accusing me of garbling—of "reprehensible effusions"*—of "unfounded productions"—upbraiding me with sundry high crimes, and gross misdemeanors, I console myself in knowing that the brightest ornaments of his country, have been assailed by his weapons—the living and the dead. Washington—whose dignity kept insolence in awe—whose glory shed lustre upon his associate—whose virtues command the admiration of the world, is pursued in his bitterness, and neither, by the sanctity of the tomb, nor by the mantle of Heaven, is defended from the venom of his shaft.

Where I am accused of giving my language, as that of the Massachusetts Journal, or of him, he is in error, and I am sure in January, he will change his mind. Can this veteran, who has been for half a century engaged in the most active scene of paper war, be ignorant, that notes of quotation, where reference is neither given, nor implied, are essential to designate a sentence, from any authority derived? He abandons his ground, and scolds me, because a Society of Farmers in Pennsylvania, put forth "*extracts*" to suit their "peculiar

* "Not the least reprehensible of these effusions, is Mr. Powel's imputing (for such seems to be the implication) to the Trustees or to me, the vainglorious and offensive boast, that Massachusetts is the *best* of the New England States."—*Col. Pickering's Letter, No. 6.*

views," justified by a prefatory letter, whereof he thinks fit to quote but a certain part.—They say (*Memoirs,*)

"You are aware, that our Association is principally composed of practical farmers—that by the act of incorporation, all others are excluded from our offices—that, although we have endeavoured to collect facts, and promulgate opinions, in the shape best fitted for *our* purposes, we have no pretension as writers, and must claim for our communications great indulgence, as they are neither enlivened by the elaborate deductions of specious theory, nor embellished by the exquisite efforts of fanciful and untiring quackery.

"You will perceive, that various extracts have been made, without regard to the arrangement of the authors, from whom they are taken, as it was necessary, occasionally, to omit passages inapplicable to the circumstances and condition of this country, and to pass by others which, as they involve abstruse scientific disquisitions, are not fitted to the peculiar views of our institution.

"If we have violated the etiquette established among authors, we trust we shall be forgiven, as we are farmers, not *writers.*"

Their views, were hostile to the notions of the Dillettanti —were opposed to the propagation of a wretched and unthrifty race of cattle, whose small secretions of milk, they conceived with Culley, fitted them but for the lawns of the rich, whose carcasses, as they had proved "*too valuable for beef;*"* disqualified them, for the general purposes, of both rich, and poor. These farmers regard not, the "*weight of butter for inches,*" but estimate the profit in butter, by the *consumption of food.* If they have omitted to give, all that Mr. Lawrence had said, they omitted very strong passages in favour of Short-Horns, which Colonel Pickering has obligingly introduced, amended by "*supposes*"† in the body of a sen-

* Mr. Haines's Letter—Memoirs Penn. Agric. Soc. p. 20.—"Whilst other gentlemen were selecting the finest forms to feast the eye, and a carcass, which if well fed, would grow to an enormous size, I wanted a small animal, WHOSE CARCASS WAS TOO VALUABLE FOR BEEF."

† "The extreme coarseness and size of the northern Short-Horns led, he (Culley) thinks, to the introduction of Norman or *Alderney* bulls, at some period of the eighteenth century, with the precise date of which we are unacquainted," and he supposes "there never was a more fortunate cross, as in no other country exists so excellent a breed of cattle, including all the useful properties. In one, perhaps the most important respect, great milking, they are superior, and even without rivals."—*Col. Pickering's No.* 6.

tence, making the author appear doubtful, where he is decisive, and clear. Why did he not proceed, in imitation of Mr. Lawrence's frankness, who in 1809,* declares, page 614 —"On recollection, I find I *have written incorrectly*," * * * "Doubtless the fault, I found with Holderness oxen, ought in great measure, to be attributed to the milkiness of the breed, or the *Alderney cross*," * * * * "*These Short-Horned cattle, are in a state of the highest improvement*, from the exertions of various eminent breeders in the North."

To this "*improved* race," I have always referred. My opinions, and those of my associates, are not founded on the contrast of sentences, but on comparison of the animals—upon "ocular demonstration"—they are determined by estimates at the pail, in the scales, and the stall. We conceive it absurd to appeal, to "*old writers*" for instruction, on that, which in their day had not appeared—for opinions upon cattle, which we breed, feed and use.

I am condemned by Colonel Pickering, as opposed to Devons—am assailed by clumsy sarcasm for unfair omissions —am attacked by gross imputation, for fraudulent "alterations," to meet as a "DEALER IN LIVE STOCK" my own ends. Yet if the quotation on Devons, had been extended, it would have shown in the language of Lawrence, that they are not only "so far inferior, to both Long, and Short-Horns, namely, both in quantity, and quality of milk, that they are certainly no objects for the regular dairy, * * * but, that they are *universally rejected* by the dairies, of their own, and the neighbouring counties." If the notice upon Alderneys had been pursued, it would have appeared, that "in weight of butter *for inches*, they are far superior to all"—that "as to quality, they are among the first milkers in the world." It is expressly stated, Memoirs, page 74, (extracts from Culley) —"The Alderney breed is only to be met with about the seats of our nobility, and gentry, upon account of their giving *exceeding rich milk* to support the luxuries of the tea

* Col. Pickering (No. 6) calls Lawrence an old writer.

table." As Mr. Haines had declared, page 21: "In churning it, mixed with the cream of other cows, we have usually had the Alderney butter come first, *taken out of the churn*, and the operation continued half an hour or more, before a second gathering of butter has taken place;" they conceived it absurd, to enlarge upon the *miraculous* properties of Alderney cream. The product of a goat, in *proportion to inches*, exceeds that of a good cow.

Colonel Pickering alleges, "Mr. Powel, in quoting the above "passage from Lawrence, leaves out the words "or Alder- "ney;" this was a *convenient omission*, after the *damnatory* "*sentence* he had just before pronounced on the Alderneys." What then is to be said of him, who whilst condemning me for leaving out *two words*, which *I* did not leave out, omits a whole sentence, supporting my opinions, but *destructive* of his own. The paragraph which he has quoted, from Lawrence, asserting that "the *Norman* and Island cattle make fat very quick," &c. has in addition the following words.

"This species is, in course, a proper cross for the large "and coarse boned; but in that view, I should prefer the real "NORMANS from the *continent*, as generally, better *shaped* "*than the Islanders.*"

Yet Col. Pickering asserts—"Lawrence and Culley here evidently consider the Norman and Alderney as the same race or breed."* This gentleman appears to have forgotten, that he had just given the words of Lawrence.—"The Alderney are a *variety* of, and smaller than the Norman."† Variety, is change, succession of one thing to another, difference, dissimilitude. What constitutes variety in technical language? I am deceived if it be not established by characteristics, which are specific, properties distinct, determined in the animal by change of circumstances, or climate, or by the breeder's art. How are races

* If Lawrence considered the Norman and Alderney as the same race or breed—where was the convenience in omitting "or Alderney," when Norman was given.

† Col. Pickering's No. 6.

improved? how are they impaired? Normandy is the finest province of France—one of the fairest portions of the globe, cultivated with the utmost skill, combining the advantages, which science and intelligence afford. The little Alderney Isle is bleak and miserably poor—the husbandry is bad—the cattle are ill fed—their properties, propensities, and forms, are consequently changed.

That Lawrence did not consider variety as synonymous with alteration in size, is evident, as he says, "the Alderney are a *variety of, and* smaller than the Norman." Culley, page 52, states, "the Sussex and Hereford Cattle, are varieties of the Devonshire, and of greater size." It will not, I trust, be contended that Cramp's Sussex Cow, or the "White-faced Oxen," are Devons varying only in size.

When Colonel Pickering would condemn a race of beasts as worthless, he introduces "supposes"* and "opinion," to diminish the force of Lawrence's praise. When he would convict a man as sordid, and unfair, he gives opinions from Culley, which after close examination, *in Culley*, cannot be found—and palms his dreams upon Lawrence, in direct opposition to that which Lawrence had said.

His mistakes were amusing for a time: but they become painful to those, who recal the position he held—His strides are so vigorous—his conceptions so rapid, he bounds from his path—in the vivid flashes of imagination, losing sight of his object, and brandishing his weapon, lacerates his own head. Thus his serenity is clouded, and instead of bewailing his star, he rails rather uncourteously at me, because I "preserve some consistency," and do not admit in violation of reason and fact, that Lawrence thought Alderneys made "Improved" Short-Horns good, although he asserts, page

* "Lawrence proceeds in his quotation from Culley, describing the superiority of this improved breed to the *Old Short-Horns* in milk, in flesh, in tallowing within the first degree. They have both speed and strength (he supposes) for labour: 'that from their superior quantity of milk, they rival, in his opinion, the best Long-Horns in the cheese and butter dairies, and for suckling they are unrivalled.'"—*Col. Pickering's No.* 6.

614, Alderneys contributed to make the old Short-Horns bad.

I appeal to the Recording Secretary of the Society, to determine, whether the omission of "*or Alderney,*" was not purely accidental, arising probably from the printer's mistake. It would be well to prove, that the interpolation of "supposes," in the quotation, was not the result of design. Let Colonel Pickering examine the passage, which has called forth his "*damnatory sentence;*" he will find, that Lawrence uses the term Norman, after the first sentence throughout. If the Pennsylvania Society, had been engaged in hurling attack, they might look to Colonel Pickering, and find authority in his practice, who, when quoting "the ingenious Mr. Marshall," omitted to notice the opinions, which militated against his own—who in citing Mr. Lowell, passed by all which were opposed to his plan.

My associates, although not practised as writers, would leave to Colonel Pickering the pleasure of overthrowing himself—the delight at the end of his labours of finding, that the highest authority which he has given, notwithstanding he exultingly said—"I am happy in being able to quote the opinions of Mr. Lowell, corresponding with my own," frankly avows, (Mass. Jour. No. 4, vol. 8,) "In the course of his (Colonel Pickering's) remarks and "quotations, he has been pleased to refer to the editors of "this Journal, or at least to one of them, and he has cited "*passages* which might lead readers to infer, that *we* en- "tertain the opinion that little benefit will be derived from "importing the improved races of Great Britain," &c.

The editor proceeds to prove the fallacy of Colonel Pickering's objections—compliments him upon his acquirements, acknowledging the correctness of some opinions conveyed in his former letters, and finally, after having produced proofs, in aid of the argument, urges—"If Colonel Pickering should "pass a six weeks' tour in England, he would feel as we do, "that it *is not a question to be discussed, but a point settled.*" Again—"Let Mr. Marshall or Mr. Young (old writers) say

"what they will, nothing can destroy the effect of ocular de-
"monstration. The cattle of England are far superior to our
"own as a body, and it is not *precisely correct* to compare in-
"dividual exceptions in our country, with general and average
"statements of whole counties in England. * * * * She offers
"you the effect of fifty years experiment, will you refuse it?
"We hope not."

Happily for my associates, and happily for those who may do them the honour to read their selections, Colonel Pickering's estimate of fitness, *in writing*, and his mode of forcing conclusions, have not been received.

All men are not gifted with the felicitous knack of rendering amusing to themselves, ponderous details, which half a century since, might have applied: nor is it conceived, where *extracts* are given, that the authority should be quoted to its end.

I am accused of "unfounded productions." I would ask him, to show that his productions are founded, where he asserts, that *I have* made extracts, that any extracts have been given in the work to which he adverts, to promote any object of mine, except where I state, page 41, I have made selections, incorporating them in my communications, to support the positions I had assumed.

The ardour of his effusions, has carried him to Germantown, and has led him, unhappily, to drag in my *innocent* friend Haines, who requires no man's bolster, except against the horns of his bull, leaving all the Long-Horns, Herefords, Devons, and Short-Horns, to make an attack upon me, and my opinions of the Alderney race.

I said they were savage.—Mr. Bowman of Wilkesbarre, was killed by one of the Germantown Alderney bulls—Mr. S——, of Philadelphia, was nearly destroyed by another—A gentleman of Frankford by a third was prostrated, and was with difficulty saved—a fourth broke from the first cattle show, and could not be constrained—a fifth, although tied in his stall, was so vicious that he could not be approached —a sixth was slaughtered, as he could not be used. They are unthrifty, I suppose, as Mr. Haines has never shown

to me one that was not poor.—They are crooked, I presume, as I have never seen one that was straight.—The cows are bad *milkers* I know.—I saw them in Europe—I have had them, and tried them.—They are worthless, I believe, as they have been by farmers, graziers, and butchers, ridiculed from our shows.*

I forbear to pursue the meanderings of this desultory discussion. I was wearied at being carried "sixty years" back, but now we are to hop over seven or eight centuries, to find dignity for Alderneys, by tracing their origin to the conquest, higher than that of three-fourths of the nobility, whose cream-pots they fill.

Colonel Pickering asserts—"Unquestionably great numbers of the Norman race of cattle" were introduced. Where are his facts? Is it to be inferred, that the Britons, Danes, and Saxons, had till the conquest, been denied the use of milk.

I am heartily tired of the Sussex prison—Mr. Cramp—Mr. Oakes, and their cows, and am so weary of this antiquarian'st disquisition, and interminable discussion, that I would to Colonel Pickering, leave the honour of the field, if I were not convinced, that victory would be chaunted, where there had been no defeat.

* "Mr. Haines's imported French cow, exhibited in an extraordinary degree, the beautiful symmetry and peculiarities of the Brittany Cattle, contrasted with the irregular shape, and light carcasses of his pure Alderney stock.

[Signed] THOMAS SMITH,
GEORGE SHEAFF,
CHARLES LLOYD."

THOMAS SERRILL, Assistant Judge.

Report of the Committee on Stock, in 1822, to the Philadelphia Society, when they held a County Fund for Cattle Shews.

The Brittany Cow, proved a bad milker, and was by Mr. Haines exchanged for a common cow, which was half dry, and she was afterwards sold for a trifle.

† * * * * Whose Duke (of Normandy), between seven and eight hundred years ago, crossed over. * * * * *

In his system of tactics, I must have recourse to huge folios, and antique records, to contend with "*conjectures*," or as Don Quixote, to battle with phantoms of imagination, derived from feudal times.

It is unlucky, that I, who laugh at details collated from British agricultural books, should be selected and rated, for extracts, made under the direction of a society of farmers, to promote their "*peculiar views*"—that I should be censured, because the results of my experience, appear in the volume wherein Colonel Pickering determines that the Pennsylvania Society have acted incorrectly, because they do not happen to agree with the Dillettanti, and him. I would inquire, why had he not, in his chivalrous regard for integrity and truth, thought fit to give all my communications, when he did me the honour first to bring me and my notices into view? Wherefore, did he select those paragraphs which he imagined were vulnerable, interlarding them with his own phrases and expletives, if he thought Farmer Parkinson's idle jests, on a "cow dealer's" tricks, and Lawrence's recital of his "friend's" tale—of "the finder's" report, upon a "stray cow," by good faith, were imperatively required, whether the Society considered the matter worth having, the opinions sound, or untrue.

They gave from Lawrence, Culley, and Parkinson, a summary of the characteristics, of various families of neat cattle, which are known in Great Britain. It was wholly distinct from all my communications, and in no wise determined, either in its shape, or extent, by any thing which I had written or said. And as to any discrepancy, omission, or error of the press, the Recording Secretary of the Society, at the moment reminds me, that when the proofs were presented, I did not examine them, declaring, "I am not answerable for what these writers have said."

The limits of the work denied to the editor, the excursive range, in which Colonel Pickering is wont to indulge. He occasionally omitted, "passages inapplicable to the circumstances and condition of this country" elevating American

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farmers, above the enjoyment of the trite jests, and improbable tales of Farmer Parkinson, and Lawrence's friend, "passing by others," which, in the lectures of Sir Humphrey Davy, "involve abstruse, scientific disquisitions, much beyond the reach of those, "*who, among farmers, are distinguished, by their labours, and success at the tail of the plough.*"

Colonel Pickering strangely identifies himself, with the Massachusetts Agricultural Journal, for whose editors, I have expressed, and must in common with all men, who are acquainted with their works, entertain the highest esteem, although we do not on all points agree. He accuses me of imputing to the Trustees, or to him, "the vain glorious and offensive boast, that Massachusetts, is the best of the New England States."

I pray him to be assured, that when I shall accuse him, of "vain-glorious and offensive boasting," I shall not find it necessary by "implication," nor by recourse to his Essays on bullocks and bulls, to fix the charge. I gave my own opinions—I pin my faith upon no man's sleeve. I hope ere this, he has discovered, that I never could desire, that my opinions, should be propped by him.

In taking leave of Colonel Pickering's No. 6, I beg to remind him, that "*I am happy*" in being sustained by Governor Lincoln, Governor Lloyd, Mr. Wolcott, Mr. Barnitz, Mr. Carpenter, and Mr. Cox—that my facts, are established by Committees' reports, and the scales:—that *he is* "*pleased*" to cite "passages, which might lead readers to infer" that opinions are sound, which his friends, the Editors of the Massachusetts Journal, refute—that he contends against that which they determine, "is not a question to be discussed, but a point *settled*"—that he "compares individual exceptions, with general and average statements," which they pronounce "is not *precisely correct*"—that he is abandoned to his fate, without authority, or hope, and having shifted his battery, and enlisted the Alderneys in vain, he is found wan-

dering in the eleventh century—groping in the dark ages* —seeking tradition to fit his machinery for a fresh farce.

I have the honour to be,

Yours, &c.

JOHN HARE POWEL.

* "The Sussex breed, Marshall says, very much resemble the Hereford cattle; and both are considered by English writers, to be nearly related to the Devons—a breed despised by Mr. Powel.† The rich milking quality of Sussex cows may have been derived from ancestors of the Norman or Alderney breed. Sussex county lies on the northern side of the English channel. Opposite to it, on the southern side, lies the province of Normandy, whose Duke, between seven and eight hundred years ago, crossed over with an army of Norman French—landed in Sussex—encountered the English army, killed their king, and ascended his throne. But he and his descendants, kings of England, held possession of Normandy for nearly two hundred years; during which, an intimate intercourse was kept up, and multitudes of Normans went over to England, carrying with them, unquestionably, great numbers of the Norman race of cattle, of which the Alderneys were a family, and originally doubtless of precisely the same character; Alderney being an island belonging to the Duchy of Normandy, and only about twenty miles distant from the main land. But when Normandy, overrun by the armies of the kings of France, was ceded to that crown, the English retained Alderney and some other islands near that coast, and hold them to this day. This would account for the frequent mention, by English writers, of Alderney cows, which probably continue to be occasionally introduced into England; although in some parts of it they have an established stock. "In the dairies of the Isle of Wight, as well as those of some parts of Hampshire, the Alderneys prevail much, and are highly esteemed for butter.—[Hampshire county joins Sussex]. If Mr. Cramp's cow is a sample (an extraordinary one indeed) of Sussex cows, it will not be deemed an unnatural conjecture, that their milking quality, especially in the superior richness of the milk, is derived from the ancient Norman race; of which, as I have said, the Alderneys are a branch."—*Col. Pickering.*

† Mr. Powel has for some years, bred from imported animals of various breeds, among which are a cow and bull of Sussex breed.

REPLY

TO

COLONEL PICKERING'S Nos. VII. & VIII.

We left Col. Pickering wandering in the eleventh century, making "conjectures" among chivalrous knights of olden times. Unhappily he returns with strange infatuation, again "*travelling*" with old Young, relating tales of wild cattle, anecdotes of a "stranger," and the feats of the same "unruly" bull. Is it "precisely correct" to censure me for allowing my "hobby to run," when he would have me follow him bounding over centuries,* or flying round the circle, in which no man can discover either beginning or end.

He quotes my assertion, that I am not fond of deductions from figures in relation to agricultural matters, that I am much more disposed to take impressions founded upon a series of evidence, arising from general investigation, than isolated facts. This is my opinion; yet it may be necessary, to wrest the weapon from the assailant, to expose his feebleness when he shall no longer have it in his grasp. We are sometimes coerced to do that which it is painful to perform. A man may be pestered by garrulity—distracted by folly—borne down by vehemence—or overpowered with noise, having no chance of being heard, but by elevating his voice—no means of being defended, but by meeting violence with force.

In the reply to Col. Pickering, the calculations were found-

* See Col. Pickering's abridgment of the History of the Conquest, genealogy of the Alderneys, disquisitions, theories, &c. and notions upon the introduction of cattle by warriors of feudal times.

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ed upon the facts HE HAD GIVEN. If his facts were true—if his statements were not garbled, *the deductions were sound.*

In my No. I. the following paragraph appeared—"Col. Pickering states, from Young's tour, made 50 or 60 years ago, 'some cows gave only two gallons of milk a day, while others gave 3, 4, 5, 6, 7, 8, and some 9 gallons of milk a day, the average quantity five gallons per cow.' In another district a dairy of MIDDLING cows, yielded from 4 to 7 pounds of butter per week,' equal to 208 or 365 pounds per annum. 'The best cows of the Lincolnshire breed, will give on an average, 6 gallons of milk a day, seven or eight pounds of butter a week,' equal to 365 or 417 pounds of butter a year."

To this Col. Pickering rejoins—"Now let us see how ingeniously Mr. Powel figures, &c. * * * He repeats from my first letter, the great quantities of milk produced in some English dairies per cow—from 2 to 9 gallons, on an average five gallons a day, but omits the small annual amount of their butter being as abovementioned, 2 firkins or 112 pounds per cow."

Here Col. Pickering, forgetting his *own quotation*, omits the QUANTITY OF CHEESE, WHICH HE HAD TOLD* US WAS ONE-THIRD THE VALUE OF THE BUTTER produced by the same cows.

I contended in my No. 3, and I think I have shown, that the product of butter, depends upon various circumstances. It in common with all manufactured articles, is influenced by the material of which it is composed; but it is affected by chemical causes, the vibrations of the atmosphere, *the shape of the milk pan;*† and Col. Pickering has informed us from the ingenious Mr. Marshall, even by "*dexterity of finger*" in skimming the cream. When cheese is made from the skim milk, and its quality regarded, as in England, where the labourers depend much upon it for their support, less cream is taken; but where new milk cheese is made, of conse-

* Col. Pickering's No. 1.—*N. E. Farmer.*

† Col. Pickering, No. 1.

quence still less butter must be produced, by dairies affording *one-third of the value of the butter in cheese.*

I know not, and I care not, whether Young meant that the cows gave from 4 to 7 pounds of butter a week throughout the year, or merely during the time which Col. Pickering is *now* satisfied to take. If Young wrote what he did not mean, he must be a very insecure authority, for any man, except such an one as Col. Pickering, who "*guesses*," and is "satisfied," that he meant exactly the term which fits his present plan.

What is to be thought of the fairness of a writer, who gives his language, or the language of Young, with unusual precision, and tells you five months after, oh! I did not mean what I wrote, I meant something else.

Let it be recollected, I stated I am not fond of estimates founded upon figures, in relation to agricultural matters; and my object *was to show the fallacy of Col. Pickering's calculations, the uncertainty of all deductions so derived,* if mine were not conclusive and true.

Col. Pickering asks—"Will Mr. Powel hazard his reputa-"tion as a practical farmer, and a man of sense, and say, that "he thinks Mr. Young, in mentioning the products of those "middling cows, at four to seven pounds of butter a week, "meant that they yielded those quantities in every week in "the year?"*

I answer NO—Mr. Powel "will not hazard his reputation for sense," nor for any other matter, upon any thing which Col. Pickering has written, quoted, or said, within the last ten years. If he meant not what he said, what did he mean? It

* Governor Lincoln states, Memoirs, page 15, that "one of his (Short Horned) heifers, 3 years old, with her second calf, has not been dry since she dropped her first, having given four quarts on the morning of her second calving." "I have now seven heifers in milk, four of them 3 years, and three 2 years old, and for richness in quality and abundance in quantity, they are not excelled by the very best cows *of any age* of THE NATIVE stock." *Ibid.* Might not these cows average from 4 to 7 pounds of butter a week throughout the year?

is to be presumed 7 pounds in the best season—4 pounds in the worst season. In one number he condemns me for "discrediting" Young—in another implies, I must be a fool for receiving him as worthy of belief. He is not satisfied with giving his "old writers," whom his "friends of the Massachusetts Journal" reject—but attempts to support them, by his *own suppositions*, at the same time he would make me appear ridiculous, when I exhibit deductions, founded on *their statements*, proved by the rule of three, treating them as if they told the truth.

I stated I have adhered to Colonel Pickering's authorities —my calculations were founded exclusively upon them— "Now let us see, how ingeniously" Colonel Pickering attempts to escape.—He who attacks me, because two words, "*or Alderney*" were omitted from a passage, in nowise connected with my opinions, or views, finds it "convenient," in No. 8 to omit an important clause of *his own sentence*, conveying "ONE THIRD OF THE VALUE" of the butter, at the time he attempts to show *the whole* product of the milk. He had given in his No. I,* the following passage:—

"Some cows gave only two gallons of milk a day, while others gave 3, 4, 5, 6, 7, 8, and some 9 gallons of milk a day; —and he states the average quantity to be five gallons per cow—yet the farmers obtained upon a medium only two firkins of butter a year per cow, and cheese about one-third in value of the butter." It was thus impracticable to ascertain the quantity of butter, their milk would have afforded— "one-third of the value of butter," having been obtained in cheese, without recourse to some other quotation, to afford the rule. In the *same* number, Colonel Pickering stated, "in another district a dairy of middling cows gave from two to four gallons of milk a day, and yielded from 4 to 7 pounds of butter per week; thus requiring *from* 14 *to* 16 *quarts* of milk to make one pound of butter."

I therefore took *his language, his own estimate*, allowing 14 *to* 16 *quarts of milk*, as the quantity required to make

* The substance of this he repeats in No. 5.

one pound of butter—not because I thought it the proper quantity—not because I thought Colonel Pickering meant to tell us the proper quantity—or had told us any thing which "a man of sense" ought to regard, but because I thought that he would not resist his own statement, that he would neither deny that which he had given, nor acknowledge that he wrote one thing, and meant another.—And in truth I had hoped, notwithstanding his fondness for controversy, that when he could not find cause of cavil against his opponent, he would not quarrel with himself.

Whilst he assails me for fraudulent intentions, accusing me of excluding from the Memoirs all which could operate against my views, he convicts himself of injustice, showing that his charge is "unfounded," by introducing large extracts from Mr. Haines' letter,* which was not excluded, urging it, with certain additions, to overthrow that which I had said. He quotes from the same work the evidence of my friend Mr. Featherstonhaugh, whose science, accuracy, calmness, and adherence to truth, carry force in all that he asserts, to prove that although this distinguished agriculturist, considered "Short-Horns as capable of producing THE GREATEST QUANTITY OF BEEF, TALLOW, AND MILK, IN THE SHORTEST TIME," their fitness for working oxen remained to be shown.

My communications appeared in one part of the volume—extracts made by the authority of the Pennsylvania Society appeared in another. I am harshly upbraided, as they did not embrace all which the author had written, although in page 614, on revision of his work, Lawrence candidly acknowledged he had been wrong.

Colonel Pickering takes from page 36 of the Memoirs, headed by the editor, DEVONS BEST FOR LABOUR, one paragraph, which he thinks operates against my views; and omits to take from page 37, a passage in continuation, but in direct opposition to his own, showing that Mr. Featherstonhaugh had "acquired a full-blooded Devon bull, for the express purpose of breeding oxen," but found it expedient, to

* See page 20.

cross him with a Short-Horn cow, "*to obtain both size and smartness.*"

Colonel Pickering tells us again, he has "read little." If he had written less, and read more, his predictions in politics, his notions upon bulls, his attacks upon farmers, would be less frequent, and more sound.

He has seen no cattle in Europe—very few of improved races at home—"has read little," yet he "guesses," and presumes to condemn, that of which, without inspiration, he must be uninformed—making round assertions—forcing his own quotations—filling pages, as if his lucubrations were to be received as maxims, his conjectures as axioms, to be confuted at the pain of harsh invective, and personal abuse.

If he had read a little more, he would have found that I had stated, page 51, in my reply to Mr. Featherstonhaugh, "*I should not select Short-Horns expressly for draught alone.*"

He sneeringly observes, that the Improved Short-Horns are called "Improved Durham Short-Horns," by Mr. Powel. If he had not been ignorant of the subject, he would have known their name.—See Herd Book, 1822.

He attempts to correct the extracts quoted in the Memoirs, yet ascribes to Culley, the opinions which Lawrence had given: the extracts were made from Lawrence's text. I do not to contend, that *all* his mistakes are the result of design.

He lustily asserts, "but here Mr. Powel will step forward, and in reference to the imported Short-Horns, confidently remark, *as if it were a fact already settled*—'IF it shall appear that by the multiplication of this race the produce of beef upon a given extent of land would be nearly doubled—the quantity of butter increased—the facility of procuring powerful oxen for draught not lessened—and withal, that the amount of offal would be diminished—the weight of flesh and of fat would be carried upon the proper parts, I trust it will not be contended that the discussion is futile, or the premium absurd, which shall have brought this race more generally into view.'"

Here is an instance of Colonel Pickering's "stepping"—not "forward;" and I might add, an instance of something more.

What might not be said of a man, who at the time he gives a quotation, beginning with "IF," stated hypothetically by the writer, and founded upon the opinions of persons whose letters had been introduced, asserts that *the writer* treated it *as a fact* already settled. What would Colonel Pickering call this?

The passage he has quoted, winding up his tirade, was found in my letter, page 42, Memoirs; referring to Major Rudd's letter, stating that "Improved Short-Horns become fatter, and heavier at two years old, than the old breeds at three and even four" ****—that "If this breed was every where disseminated, *the produce of beef on a given extent of land would be nearly doubled*"—to GOVERNOR LINCOLN'S LETTER, page 15, stating—"I have no knowledge of the properties of this stock for labour, never having altered but one of the males; I cannot, however, see any reason to doubt their value in this particular, **** for THE DAIRY AND STALL, I speak, with the utmost confidence, OF THEIR PRE-EMINENCE."*****

Colonel Pickering proceeds—"Here Mr. Powel and I "must certainly agree, and if I live long enough for the arri-"val of the happy time, &c. I will join Mr. Powel in every "measure, to the extent of my limited powers, to propagate "rapidly and extensively his favourite race. But that un-"lucky "IF" must first be *changed* into a *positive assertion* "of the facts, and these supported by *unexceptionable* testi-"mony."

The "IF" was applied, as *I* am in the habit of using it, where I refer to the opinions of others, where I have not the facts immediately to show, leaving to discomfited disputants, abandoned by their authorities,—shaken off by their friends, entangled in their own arguments, to "*change* IF *into certainty*"—to give opinions, as "facts, supported by testi-

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mony," which although positive and precise, may be distorted after mature deliberation to meet any new end.

I have omitted some points of his attack, not venturing to interfere in matters of science, where he and Sir Joseph Banks cannot agree.

I am heartily glad to bid him adieu—to leave him soaring in the regions of philosophy, boldly asserting, that the PRESIDENT OF THE ROYAL SOCIETY MISTOOK THE EFFECT FOR THE CAUSE.*

I have the honour to be, &c.

JOHN HARE POWEL.

Powelton, Oct. 1 1825.

To the President of the Pennsylvania Agricultural Society.

* "The only writing of his (Sir Joseph Banks) bearing a relation to husbandry which has fallen into my hands, is a small pamphlet on the mildew of wheat; in which, though his theory seems to have received *some* countenance from another eminent naturalist,† I venture to express my opinion that Sir Joseph has mistaken the *effect* for the *cause*."—*Col. Pickering, Letter* 8.

† Thomas A. Knight, Esq.

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PROCEEDINGS

OF THE

PENNSYLVANIA

AGRICULTURAL SOCIETY:

WITH THE

ADDRESS

OF THEIR PRESIDENT,

JONATHAN ROBERTS, ESQ.

DELIVERED

AT THEIR FIRST ANNUAL MEETING.

PHILADELPHIA:
Printed by Clark & Raser, No. 33, Carter's Alley.
1823.

ADDRESS.

RESPECTED ASSOCIATES:

We have reached an interesting period in our progress—I congratulate you with the liveliest satisfaction on the promise we have witnessed in this first exhibition, held under the auspices of our Association. Nothing could be more encouraging than the regard for good order and decorum, which has every where prevailed, amongst the great concourse of our fellow citizens, who have favoured us with their presence.

The readiness and liberality with which the Legislature bestowed on us chartered immunities, while it affords a gratifying evidence of their enlightened patriotism, devolves on us the duty of realizing their just expectations, by earnest exertions to direct the means they have put at our disposal, to effect the most useful ends. In this proceeding, we have a new proof of the disposition of our Representatives, to seize upon and improve every occasion to encourage and promote the agricultural interests of the commonwealth.

It is impossible to survey the progress of human affairs, without being devoutly impressed with the wisdom and beneficence of the Creator, in opening to man endless hopes of improvement. What wonderful ameliorations of his condition do we find through that period to which history extends. What clearer demonstration can be required, that further and higher improvements are to him attainable? How short a time since

this extensive and flourishing republic was overrun by a few hordes of wretched savages, who existed in a state little advanced above the irrational creation.

Our ancestors were permitted to bring with them to these newly-found shores, the civilization of thirty centuries; and to leave very many of the errors and vices handed down from darker periods, in the land of their fathers. They seem to have been led by one of those signal dispensations of Providence which promise mighty blessings to the human family. Though formidable obstacles were opposed, yet what amazing results have a period of less than two centuries produced. It was not merely a wilderness, separated from the civilized world by a watery expanse of a thousand leagues, that was to be tamed and cultivated—the unjust restrictions of the mother country were to be courageously resisted, even though supported by tremendous power, and maintained with ferocious obstinacy. Thanks to a kind Providence, a brighter prospect opens on us. No soil seems left in which the seeds of future conflicts can vegetate. Our country is called upon to realize all the philanthropist can wish or hope. In establishing for themselves and their posterity the rights of a separate and independent community, and in consecrating the fundamental principles of civil and religious liberty as the corner stone of their polity, our fathers planted the seeds from which we, their children, may hope to gather, under the blessings of that Providence which has so eminently watched over us, an abundant harvest of individual and social happiness.

In countries, the governments of which have been founded on force and conquest; where fraud combined with power to elevate the few and degrade the many, Nature, true to her purpose, has been constantly breaking through the mounds of artificial distinctions, by the production of men from every

class, distinguished for their virtue and intelligence. The hard hand of oppression has blighted many of the flowers of human intellect. This evil, it is our hope to escape. Here all are untrammelled; all enjoy a full and fair community of equal rights.

It would be little reasonable to expect that the great results, which in the economy of Providence may be reserved for this western world, should reach an early consummation. The history of all times proves that moral advancements are the more durable for having been gradually attained. Their solidity, it would seem, was in the ratio of their march. The cultivation of the youthful mind is the lever which must raise individuals and communities. It is not the business of a day to diffuse through a whole community a taste for reading and a relish for knowledge. It must be the work of time, under the influence of wise laws faithfully and diligently administered.

A high state of moral improvement can justly be looked for only when a people are happy—Plenty is an essential ingredient in the elements of individual and social happiness.—Among the pursuits promotive of public prosperity, the cultivation of the soil, and rural industry, stand pre-eminent. It would be useless to insist upon a truth so obvious.

In many of the settlements around us, the natural fertility of the soil has been exhausted. Comparatively little new grounds remain to be brought under cultivation. To refertilize the old must be our resource; and the necessity is every day becoming more imperative. The newer plantations are constantly declining in fruitfulness. Farms are subdividing, and families must derive their support from fewer acres. The state of our maritime commerce does not give so good, or so extensive a market as heretofore, for our products. Hence

arises a necessity to vary and multiply them. We must substitute articles fabricated at home, not having the means to purchase foreign commodities. Our country needs to be enriched with better races of animals, and new objects of culture. To attain these desirable ends, the time is propitious. We are less engrossed with the concerns of money getting, than in more prosperous periods. To adapt ourselves to our new situation ought to be the care of all. It will be the object of our Association to aid in this beneficial work.

Nations who have been most eminently commercial, have ultimately, at least, been led to cherish agriculture as the best support of commerce. Even conquests and colonies have not superseded this necessity. The principles of our government do not permit the holding colonial dependencies. In a republic all must be integral—a full community of the means of happiness.

With us the rural population will ever be most numerous. Though individually they may not be the most wealthy, they must collectively be the possessors of the greater portion of national wealth. In the community of public burdens, they will ever sustain a full share. I claim for them, however, no extraordinary merit or virtue. The tilling of the soil has every where been deemed honourable; but the farmers of United America seem destined to form a more respectable and more intelligent body of men than those of any other country. Their numbers, and our political institutions, secure to them much consideration. Education is within their reach. They are invited to the acquisition of knowledge. Intelligence and virtue are every where secure of respect.

Our social structure, as before noted, is based upon a perfect community of rights. The influence of this benign and powerful principle is conspicuous in our short history. The

paucity of our numbers, and the impoverished condition in which we emerged from a colonial state—the revolutionary war, and the recent date of our federative government, with other causes now disappearing, have been unfavourable to a realization of all the blessings, which ere this might have flown from them. It must be apparent to all that there is a progressive improvement in our condition as a community—We now feel as a nation, though that feeling was not sufficiently rooted until the close of the late war. The firm and enlightened establishment of that feeling in our public councils, was the true era of our national independence. Before that period, the exertions of our best patriots were often fruitless, for the want of a more ardent and a more concentrated love of country.

It is gratifying to find that a spirit of agricultural inquiry and improvement began to display itself soon after the revolutionary conflict ceased. The origin of the Philadelphia Agricultural Society is referrible to that date. To their public spirited exertions we owe much of the advancement we have made in husbandry. To the north and to the south, kindred associations have sprung up, and embrace many of our most distinguished citizens. We may hail it as a glad omen, that men conspicuous for public usefulness continue, as heretofore, to give the weight of their talents and example to the pursuits of agriculture, and harmonize in recommending, both by precept and practice, to high regard, this main sinew of national strength and great source of happiness. A full proportion of the names which are consecrated in the brightest pages of our history, were called from the cultivation of the soil to their country's standard and their country's councils. There is one *name* in the catalogue of those worthies, so associated with the place in which we stand, that it needs not to be mentioned

to be in the recollection of us all. We are near the birth-place and residence of WAYNE. His country found him on his farm, and by bringing to her cause his dauntless valour and devoted patriotism, he has secured an imperishable fame in her lasting gratitude.

Our object is to further the laudable views of our elder sister the Philadelphia Agricultural Society. With them we earnestly wish concord and co-operation. The paths of our usefulness do not interfere. There will be more leisure, more science, more philosophical speculation with them; with us more experiment, and a wider range of practical results. This Association is a consequence of that; a mere enlargement of the sphere of its usefulness. Originating amongst its members, and especially supported by the public spirit that so liberally sustained that Society, we respect their footsteps, and wish to aid in consummating their enlightened views.

After a long period of calamity and carnage, suffering humanity has demanded, not in vain, a pacificated world. A state of peace has thrown nations very much upon their own resources; such is emphatically our attitude at present. We must seek to produce those things at home, which we can obtain no longer abroad on the principle of exchange, and they are only so to be obtained without certain and speedy ruin. It ought to be our felicity that the resources of this widely spread and growing empire are immense, and that the energies of a free people may be directed to develop them. Many of the arts essentially contributive to the comforts of man are now in successful cultivation. In the advancement towards perfection in those arts, his two primary occupations, those of the herdsman and tiller of the earth, ought to hold their proper place. He can no longer recline at his ease amid the bloom of Eden, but it may be made to reappear through his

industry. Though he be decreed to toil for his bread, a beneficent Creator has formed the vegetable and animal divisions of nature susceptible of such an improvement under his care, as, while it cannot but astonish, should make us devoutly thankful.

Where have naturalists been able to discover, but in the possession of the herdsman, that useful animal, the sheep; or where the fine form and docility of neat cattle? They are the product and the reward of man's care. That first gift of Heaven, the wheat plant, owes its value most probably to culture. It is perhaps equally true of many of the frumentacious plants. Men of science appear to agree in the fact, that the parent stocks of the delicious fruits of our gardens and orchards, were crabs too untastely to be eaten. A truth, not less consolatory is it, that these improved productions can be perpetuated and remain susceptible of an exaltation, we know not how high. What a vista here opens on us for hope! What a field for improvement!

Some plants and some animals are formed to thrive in various climates—how widely they may be dispersed, is imperfectly settled. The corn plant flourishes through a wide extent, differing in its stature more than in its product. It is a fact not more curious than important, that we find it naturalized in very distant latitudes. He who cultivates the soil, derives immediately from his own labour the greatest variety of comforts. We yet little know how many of the productions of other regions may be concentrated in a farm in the latitude of Philadelphia.

But it is in vain to talk of producing much beyond what the market demands; that for which there is no sale, will hardly be cultivated; many of our products are in little demand, and hardly bear the expense of culture—Can this state of embar-

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rassment be relieved? is a question, the solution of which claims the sober consideration of the wisest heads. Much has been done for commerce and manufactures—but when has the agriculture of the middle states shared any benefit from national legislation? Yet we have grown to be one of the most considerable agricultural nations in the world, and this portion is not behind in her productions. This great national interest was well content to see commerce cherished as a pursuit that then needed it, and as a most valuable mean of prosperity; commerce then winged our products to every market. To us, then, every market was open. In many markets, we are now forestalled, and this interest in her turn claims regard; it is time to harmonize and consolidate it; it will not seek the aid of bounties and premiums, but it has a right to the home market; it is in the power of the Congress to secure it without oppressing any other interest; the majority of the state and national representatives must ever be elected by those interested in the culture of the soil—their petitions must be secure of attention, and the legislative power, when it is proper, cannot be slow to interpose. Allow me to repeat that it is just, that those articles in which we abound, should be secured the home demand. An accidental rise in the price at home, or depression abroad, cannot make the importation of such articles a wise policy; we have, and must continue to have, a full supply of grain. Why then offer facilities for its importation? Countries which perhaps at no time grow sufficient for their own consumption, have found it necessary to protect the farmer against sudden depressions by importation. So far as consumption is concerned, absolute prohibition would seem for us the better policy. Wheat and potatoes of foreign growth have sold in our markets at good profits, when the products of our own soil would hardly repay the ex-

pense of cultivation. On nothing does prohibitory duties seem so strongly called for as the article of *wool*. By one of those changes in the affairs of nations, which rarely occur, the fine woolled sheep of Spain became transferred to our country; we all remember at how much expense, and some of us perhaps have to regret it. Practical men at length became engaged in the growing of fine wool. This interest was at first checked by the large importation of woollen goods, immediately after the late peace with Great Britain. It had hardly begun to revive when extensive importations of wool paralyzed the hopes of the farmer, and now seriously threatens the annihilation of this precious race of animals. For some time fine wool, the growth of the country, has not been exchangeable for money; the keeping of merino flocks under the best management is almost a total loss; I speak from actual experience. Prompt and effectual legislative interference is required for the preservation of this interest. No exertion ought to be omitted to secure so important an object. An encouraging bounty has long been secured to the growers of sugar, an article, which perhaps we have no means of cultivating to the extent of the home demand, while wool, an article we can produce to any extent, pays less duty on importation by one-half than sugar. The best interests of the country loudly call for increased duties on foreign woollen fabrics, and onerous ones, at least, on the importation of the raw material. In the year 1816, our most successful manufacturers of cotton despaired of producing goods at the India prices; but in the short space of seven years, what astonishing facilities have been acquired in the cotton business, while the raw material is still at a good price. Our woollen manufactures are fast following the success of our cottons, and the production of the raw material is little less important to the middle and

eastern states, than the growing of cotton and sugar is to those of the south and west. It is not a high price that is needed to encourage the growth of wool, but a market at which it may be exchanged for money.

Farmers are deeply interested in having the inspection laws so executed as not to give a preference to the products of other states in our own markets, as well as those abroad. Time has been, when our superfine flour was preferred to that of the neighbouring states; lately, however, that of New York and Richmond, and perhaps Baltimore too, has been in better demand than that of Philadelphia inspection. This inconvenience has not arisen from the want of good laws, but from a mistaken policy in executing them. It is especially the concern of the producers to keep the standard of inspection as high as that of our neighbours. A lax inspection may easily disparage our products, but it will be always found a difficult task to restore their credit. The raising a degraded inspection will be felt oppressive, and in the natural order of cause and effect, credit once lost cannot be regained until it may have been some time deserved. Almost every man knows the value of credit, both as it relates to men and things, though it may be often less real than fanciful.

The freedom enjoyed by our citizens in the choice of their occupations, forbids us at an early time, to look for large investments in the cultivation of the soil, for the mere object of profit. Centuries are perhaps to pass before our farms will be so expensively wrought, or so minutely divided, as in the best populated countries. Necessity only can press man so closely on man, and that necessity cannot early occur in so extended a territory. An exemption from the inconveniences of a dense population forms not the least valuable item in our rich inheritance. Too much *land*, however, brings inconve-

nience, as well as too little. Speaking practically, the size of a farm is best regulated by the consideration of what a proprietor can conveniently superintend personally. That description of persons called managers, are rarely to be met with amongst us. Most of those qualified to take charge of other people's business, prefer having it of their own. This fact is a gratifying proof of the freedom and happiness of our people.

The true point of excellence in practical husbandry, is as far as possible to make the farm fertilize itself—Not that it is bad economy to buy manure, but that the production of it is the only resource for the country at large. The collections from stables, and the streets of cities, are to be had in comparatively few places. In years past, the demand for produce at good prices, and favourable seasons, gave to farmers a return for their capital and labour that cannot now be looked for—Unproductive seasons have been joined to dull markets for several years—Light crops make lean barn-yards, and impoverished fields follow as a consequence. There is however room for an improved economy in the production and collection of manure. Lately, a beginning has been made to convert the whole corn plant into a nutritious fodder, or most valuable addition to the savings of the barn-yard. The advantages resulting from this method, it is to be feared, are too little appreciated. With less labour, I have found it the best method of harvesting the crop; it is thus cured with less liability to injury from autumnal rains. We may well doubt, whether we have learned the true value of this magnificent plant: the crop is one of the most certain, and least exhausting to the soil, while it is one of the most productive, cheaply cultivated, and most useful: by this crop our sward lands are best decomposed and mellowed—it forms an important item in the course of crops, that must constitute our best husbandry. It may be

doubted, if the root cultivation would be held in such high estimation in Great Britain, if this plant could be matured there; —here the root culture has been little resorted to as a mean for feeding stock; it is by no means certain, that the American farmer would find advantage in engaging deeply in this course of husbandry; crops of this kind can only be abundant on grounds heavily, and of course expensively, manured: they will generally require more labour than the corn crops; they are not easily secured from frosts in our severe winters, nor can they therefore be fed with perfect convenience. So far, however, as they can be used as food for cows giving milk, they form an excellent admixture with corn meal—but they fall much below the corn crop, in what they add to the savings of the barn-yard. The potato and the turnip are the only root crops I have had much experience in cultivating: I have found them both uncertain in their product—the former an expensive culture, and the latter of little value when abundant. Neither of them leave the soil in so good a state for a succeeding crop as the corn plant.

In the course of twenty-five years' experience, I have found summer fallowing a bad course of husbandry, even for a wheat crop, before the ravages of the insects made it so precarious a culture. By a course of corn, flax, oats or barley, wheat or rye, and clover, we have avoided fallows, and have been enabled to improve our soil.

Farmers can well recollect how beneficially gypsum was exhibited as a manure, and that in the course of eight or ten years after its general application, the clover afforded neither a wholesome summer pasture, nor winter fodder. Recourse was then had to the culture of the fibrous rooted grasses: an evident diminution of the ploughed crops followed. Of these grasses, timothy was found to be the most productive, but the

most pernicious to the soil. It was recommended by its kindly commixing with clover; but with these qualities, it is in very little estimation at present among experienced farmers. The orchard, ray, and herd grasses, appear to be entitled to no preference over the native grasses of our country; they do not afford so rich a sward for the plough. The clover at present seems to have regained its original value. The cause of its deterioration or recovery, I pretend not to explain.

The use of gypsum for a while superseded the use of lime: during that period the soil became saddened and unproductive—A recurrence to its use promises the former results, an open and productive soil. The effect of lime on grass crops in this second trial, has been scarcely less visible and valuable than the effect of plaster when first applied. This precious mineral (limestone) abounds throughout our country. It forms an essential ingredient in restoring and improving the fertility of soils. Our farmers well understand this, and they now apply it to an extent and expense alike creditable to their enterprise and intelligence. But to realize its full benefit it must be accompanied with moderate dressings from the barn-yard, at periods from seven to nine years. To keep grounds long in grass, without plentiful top dressings, will be found an unprofitable husbandry. I have experienced it to be advisable to plough the third or fourth year. The extent to be put under the plough, must be proportioned to the resources of the barn-yard or the manures obtainable. Ploughed crops will ever exhaust the soil, and the farmer should be prepared to retain or improve its fertility. Dressings from the barn-door are never doubtful in their effects. Disappointment never results from their application. Casualties may mar the crop immediately following; but benefit is sure at last to be realized.

Farms have been made singularly profitable by the cultivation of grass, and their fertility greatly increased. In this middle region, however, grass farms are less likely to multiply than in the interior and remote settlements. Frumentacious crops must remain a leading object with farmers here. A good system of husbandry comprehends a varied cultivation, and the keeping of several kinds of stock. The farm is thus made more productive, less liable to accidental discouragements from unfavourable seasons and other causes, and a succession of employment is kept up through the year, with fewer occasions of pressure or relaxation.

We have been slow to substitute the labour of oxen for that of horses; but the value of the ox, as a labouring animal, is becoming every day better understood. With us the habit of keeping large stocks of horses has become inveterate. The horse, it is true, is a burden-bearing, as well as a draught animal, which the ox is not. In small farms they cannot both be kept, and the horse is justly preferred. This reason will not hold in larger ones. It is not easy for those who have not witnessed it to conceive how much more cheaply the ox can be kept than the horse. When the former becomes unfit for labour his value is but little diminished. It is not so with the latter; he becomes useless. It should be our care to breed only good horses, diminish their numbers, and substitute oxen for the draught drudgery of the farm. We are too little acquainted with the sagacity and docility of this animal, and how profitably he can be employed.—Our prejudices are strong against him. He is considered the emblem of dulness and inactivity. But his degradation is a consequence of our ignorance, inattention and neglect. The ancient Egyptians chose him as an emblem of deity—What a homage to his usefulness! I inherit nothing from my father I value more than the pre-

ference he taught me to feel for the employment of the ox; nor can I hope to leave a better inheritance to my children—Experience has convinced me he will perform as much labour as the horse—in heavy plough draught he is greatly preferable. The exhibition of his performances here will give him that estimation he deserves—The driver and himself will not continue to be the object of the world's dread laugh—He will rank with the farmer as one of his most valuable animals.

Our heretofore national prosperity has given us a taste for productions which we must either seek to domesticate or forego their use. Wine, silk and tea, may be named among these conveniences. Millions are annually exported and expended to obtain for us those articles. Europe supplies us with wines and brandies, but she has acquired those rich productions by cultivating the vines of Asia. The potato of America has become a blessing to an important portion of Europe. Has not the time come when the American farmer ought to commence the cultivation of the vine? No plant has been more improved by the care of man—None is more easily preserved and multiplied in purity. We know not but it remains for the new world to rival the old, not only by cultivating her varieties but by the improvement of our own. The vine is not among the native productions of Europe, it is every where indigenous in America. When we recollect that the juice of the grape is relished by all—that it is healing to the sick, and invigorating to the healthful, it must obviously form one of the most desirable additions to our culture.

Silk, now so valuable to Europe, it is a well attested historical fact, was also introduced there from Asia. The silk-worm is a native of America. There is no pursuit to which she is more strongly invited than the growing of this material. Silken fabrics are among the almost indispensable

conveniences of life—they form too useful and too elegant an article of female dress, to be readily dispensed with by our ladies. The country must either be impoverished to obtain them from abroad, or it must be enriched by making them a home production. The first step to obtain this important end is the cultivation of the mulberry tree. Practice has proved our country well adapted to the growth of silk. It was essayed before, and during, the revolutionary war. We have unfortunately been made to forget it, by the encouragement given to other pursuits during the late convulsions in Europe.

Tea, perhaps more than any other article we do not produce, has become a necessary of life. It is believed, that within our national limits, we have soil and climate suited for its growth. It is not exactly known, whether some varieties of this plant would not thrive in our latitude. It would be a great national benefit to naturalize it in America.

In practical husbandry the expense of labour is a cardinal consideration. Since the year 1818, farmers have very sensibly felt that labour has been much dearer than produce. We cannot speedily look for their equalization: a mitigation of this effect may be sought in some degree by improved implements. Those who have used the drag-rake can attest its value in lessening the expense, and facilitating the gathering, of that important article, hay. The revolving rake of Pennock and Pierce, is a most valuable improvement of that useful machine. An ingenious application of animal labour in the cutting of grass, has been effected. Of its practical utility I cannot speak, not having seen the machine in operation—If it can be adapted to common farm purposes, it would rank the inventor deservedly among the benefactors of his country. Nothing is more wanted than the application of animal labour in the cutting of grain. It is the business on the farm which

requires the most expedition, and it is always the most expensive labour. Such an invention can be no easy task, or the ingenuity of our fellow citizens would, ere this, have effected it. But we have no right to despair, where there is not a physical impossibility. A liberal premium might well be employed to obtain such an object. Manual operations are greatly accelerated by properly constructed utensils—How much has been gained by substituting the steel hay fork, instead of those formerly used. The scythe is improving from year to year—not so with the sickle: thirty years ago it was better than it is now. Of all the utensils on the farm, the plough and the harrow are of primary importance. It is not very obvious that either of them are susceptible of much further improvement. It is desirable to ascertain, and bring into use, in the variety of existing models, those that will perform the requisite operations with the least possible force. This is within the range of our objects. The influence of habit is so strong, that it is difficult to get inventions into use, even when their utility has been demonstrated. How many years elapsed after steam power was applied to propel boats, before it could be brought into general use! He who succeeded in this will be better remembered than the discoverer. The rake drawn by animal power, is yet comparatively in little use. In no way can this Society effect more good, than in accumulating and demonstrating, by actual operation, the utility of inventions calculated to facilitate the labours of husbandry and rural employments.

Household industry comprehends an essential interest in rural economy. It is the department in which the influence of that sex, to whom we are bound by the strongest ties of love and gratitude, is most conspicuous—it is the link which connects them with our exhibitions—it is the scene where the

thrift, the ingenuity, the taste and intelligence of woman, has full latitude of operation. How many comforts—how many enjoyments are accumulated—how many endearments are secured, by raising her to her proper elevation! A community will be found refined and happy, in proportion as woman is secure of respect. Employment is ever the shield of innocence, and the nurse of virtue. In a farmer's house it is the best maxim, *to make what you can*, even when foreign commodities are most depressed. Who would not prefer having their spinner, their dyer, their clothier, for their neighbours, rather than in a foreign land? Independently of all interested considerations, we must delight to cultivate an interchange of kindnesses and mutual good offices. How much must life languish where they are wanted! Our young people, who do not inherit farms, may in these pursuits commence life as heads of families, and end it as cultivators of the soil. But there are seasons in which the farmer needs their assistance in his business—they will be found ever ready to lend it: Agriculture must languish where it cannot, at intervals, bring tradesmen to aid in its labours. It is not in relation to the comforts of families only, that household manufactures deserve high regard and consideration: they are of essential importance to national prosperity. The community whose time is the most carefully and usefully employed, will be the most flourishing. Where there is no household manufactures, much time will be consumed to little purpose, and much expense must accrue, to purchase that which is not produced. The wealth sent abroad for foreign conveniences, as things now are, will slowly, perhaps not at all, return. Thus the nation will become impoverished. National penury must militate against individual and domestic happiness. It is a point of sound policy, to nourish a taste for household manu-

factures. It is for the ladies to facilitate and effect their establishment—Teach them it is for their country's good, and they will do their duty. They will not be slow to learn, when their fathers, their husbands, their lovers, become their teachers.

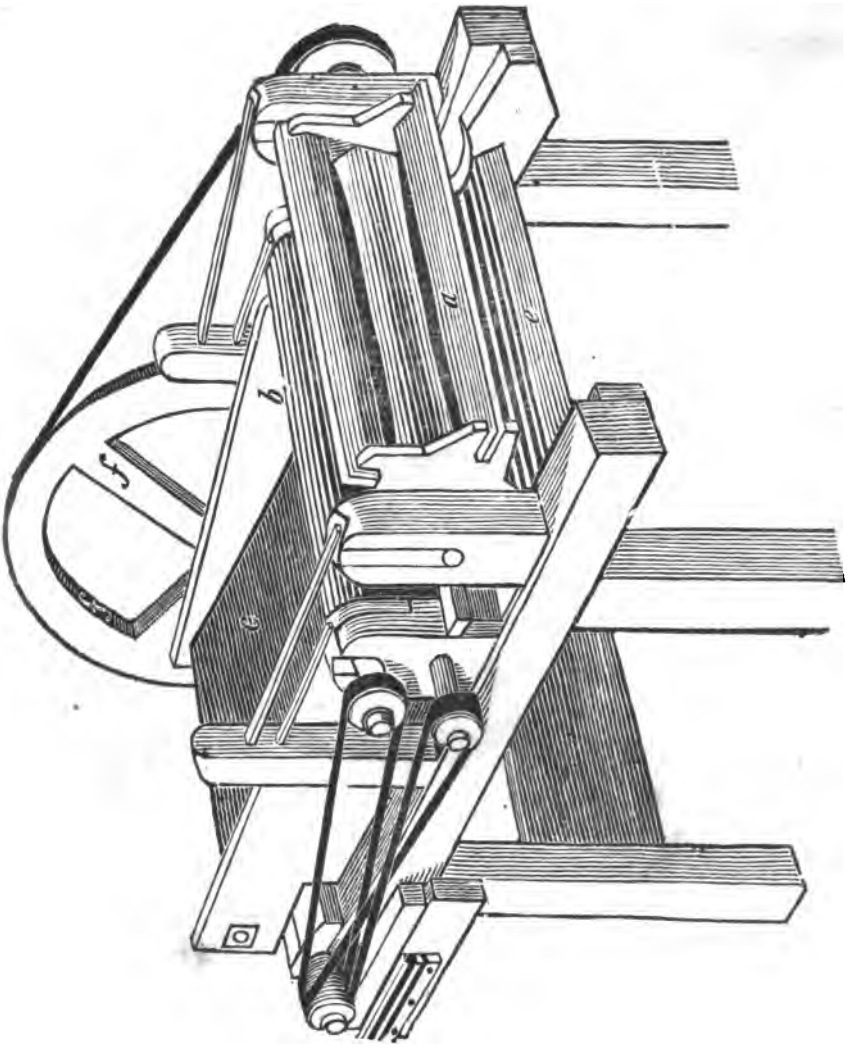
Europe is still benighted in the undissipated errors of the dark ages. In our polity we have improved the principles of more ancient and better times. With the ameliorated morals of Christianity, it will profit us to emulate, in our habits, the magnanimity of the ancient republics. The exhibition of female skill and industry must greatly augment the interest of such occasions as this. The presence of woman exalts and refines every thing. Her presence will not be wanting where her taste can with propriety be gratified. Wherever she appears, it will be as the sign of the covenant of the happiness and dignity of man.

But, gentlemen, I am too long delaying the closing operation of the occasion. The distribution of premiums, though the last, will not be the least pleasing part of our duty: the more especially as they will fall where well deserved. This exhibition, I am happy to believe, has been gratifying in a high degree to all who have witnessed it. Such perfection in the form and qualities of animals, to be believed, must be witnessed. Our farmers cannot—will not—continue to nourish the inferior races, when so much better are obtainable. I cannot but think it is for the Pennsylvania Agricultural Society, in the close of their first year's labour, to have good reason to hope for a long career of usefulness.

It is for those amongst us whose circumstances permit them to be farmers from taste, and not from necessity, who can incur the expense of obtaining from abroad the most highly bred stock, and undertake experiments in culture, to continue to

deserve well of their country:—while it is for those of us who must look to the soil we cultivate for the comforts we enjoy, to emulate their laudable efforts, by improving the means we now have, or which they may place within our reach.

I cannot omit expressing the high gratification the Society feel, in the evidence they have now received of the approbation of their fellow citizens, of the undertaking they have embarked in—nor of offering the sincere thanks of the Society to Mr. Evans, for his public spirited exertions to accommodate the exhibition; and to the gentlemen of the neighbourhood, who have so hospitably co-operated with him. To the committee of arrangement, for their untiring diligence and the perfect success with which they have executed their arduous and delicate duties, as well as to the various committees of examination, and the gentlemen who have kindly afforded their services to assist them, the thanks of the Society are justly due, and sincerely tendered.



Pope's Patent Thrashing Machine,

ADAPTED TO THE POWER OF ONE HORSE.

EXPLANATION.

a The revolving Beater, the rods of which strike the grain 3000 times in a minute.
b The parallel fluted Rollers, that assist in conducting the straw forward to the Beater.
c The circular or endless cloth, on which is spread the material to be thrashed, and which conducts the straw to the rollers (*b*).
e The curved floor, consisting of slats, on which the grain is beaten out.
f A Wheel which drives the Beater, receiving its motion from the horse gear.

FIRST ANNUAL EXHIBITION

AND

CATTLE SHOW

OF THE

PENNSYLVANIA AGRICULTURAL SOCIETY.

The Directors in making public their proceedings, are glad to be enabled to state, that the result of their late meeting has equalled, in every respect, their most sanguine expectations.

They had guarded against such irregularities as too often arise where incongruous multitudes are assembled, as it was their aim, rather to prevent their occurrence by vigilance and precaution, than to repress them by the infliction of the penalties of law. They confidently believe, that nothing occurred to give dissatisfaction to the most correct and exemplary, of the many respectable persons, who were present. In the vast concourse of their fellow citizens who witnessed the scene, they had the most satisfactory, and decided evidence of public approbation, in support of their efforts.

The Society earnestly desired, that the exhibition should be so conducted, as to attract the sanction of female countenance, for the important and interesting productions of household in-

dustry. In this wish, they were gratified by the presence of many ladies, who heard the address from the President, and after assisted in the examination of some articles, upon which it was peculiarly their province to decide.

Various Agricultural Societies having been invited, the Presidents and Vice-Presidents of the Societies of Brunswick and Bridgeton, of Bucks and Chester counties, the Secretary and other officers of the Philadelphia Society, as well as many distinguished strangers, from distant States, honoured the meeting by their presence.

The exhibition of stock comprised more than an hundred neat cattle, of the best and most costly foreign, and most useful native breeds—an hundred and fifty sheep, with the various characteristics of English, Tunisian, Spanish and Irish origin, uniting in form and properties most that can be desired in excellence of flesh or fleece—thirty horses, varying from the graceful figure of the fleet and high mettled courser of Arabia, to the heavy frame of the patient and powerful draught horse of Pennsylvania.

The exhibition of some of the implements of husbandry was interesting, not merely to farmers, from their usefulness, but to mechanics from the ingenuity and skill displayed in their construction.

Pope's Machine, thrashing with the power of one horse, twelve sheaves of red chaff wheat, perfectly clean in three minutes, confirmed the impressions, which had led the Society to recommend it for the purposes of Pennsylvania Farmers.

Goodsell's simple, and effective Flax Dresser, promises to be scarcely less useful, in rendering profitable the cultivation of hemp and flax, in the middle States, than the famed machine of Whitney, has been successful in aiding the production of the great staple of those of the South.

Reading's Thrashing Machine excited attention from the ingenuity, and simplicity of its construction; although, from its not having been properly adapted to horse power, it appeared to great disadvantage.

White's plough, in turning with great neatness, a furrow of stiff sward, six and a half inches deep, and sixteen inches wide, required a draught of 616 pounds.

Stevens's plough, in turning a furrow six inches deep, and eleven inches wide, of the same sward, with equal neatness, required a draught of from 420 to 448 pounds.

Suplee's plough required a draught of 532 pounds, in turning, with great accuracy, a furrow, six inches deep, and thirteen inches wide, of the same land.

Bergen's "self-sharpening plough," made by Oliver Evans, in turning a furrow of the same sward, seven inches deep, and thirteen inches wide, required a draught of 728 pounds.

George Nixon, of New York, exhibited his patent ploughs, harrows and cultivators, which do credit to his skill and to his workmen. The ploughs appeared to be fitted rather for fallow, than sward land.

A. Hoopes, of Philadelphia, brought a plough which has for some time been used in this state.

William M'Conaughey exhibited his Cultivator and his Corn-harrow; for the latter he took a premium.

George Blight sent a Yorkshire Root-cutter, cheap, simple and effective.

John Hare Powel exhibited his Cultivator and his Dibbling-wheel, which were remarked, as fitted to save much labour in the cultivation of root crops, and also Beatson's improved Scarifier, well constructed for the production of fine tilth.

Moses Pennock produced a revolving Horse-rake, and his Chaff-cutter, not unworthy of the ingenious inventor, who has

contributed so largely to the improvement of farming implements.

Mr. Hoopes of Downingtown, showed a new modification of the Horse-rake, which has been much approved by the farmers of his neighbourhood.

John Beaver presented a Winnowing Mill, which is an improvement upon the Wheat Fans in general use.

Williams's Horse-hoe, Expanding-harrow, and Double-mould board Plough, although last in the list, were not the least worthy of notice.

The late organization of the Society prevented the publication of their premiums, sufficiently early, to excite competition for the prizes offered for winter crops, and household manufactures, so extensive as the good management, zeal, and industry of the inhabitants of the fertile counties associated under the law, had led them to expect.

The decision upon claims for Indian corn, and root crops, has been necessarily deferred until their harvest shall have been completed.

Joseph M. Downing presented to the Society some bottles of gooseberry wine, showing that an excellent substitute for some of the wines of Europe is within the reach of most farmers, who have not the means of cultivating grapes.

The well contested trials of horses and oxen at the plough, contributed not a little to the interest of the scene; and it was a source of congratulation, that neither the emulation of the competitors, nor the anxiety excited among a vast concourse of spectators, interrupted in any shape the good order, good conduct, and good feeling which pervaded the whole.

NEAT CATTLE.

To the Directors of the Pennsylvania Agricultural Society.

The Committee on Neat Cattle recommend the award of—

The first premium for bulls, not more than six, nor less than two years old, to Alexander Reed, of Washington, Pennsylvania, for his short-horn bull, bred by John Hare Powel, from a native cow, by the imported Durham short-horn bull Denton, - - - - - $50

The second premium to Joseph Kersey, for Oakes, by the imported Durham short-horn bull Cœlebs, - - - 20

The third premium to Aaron Clement, for Roderick, bred by John Hare Powel, from an half bred Teeswater heifer, and John Tomlinson's bull Major, - - - 10

The first premium for bulls, not more than two years old, to Henry A. Carpenter, for his Durham short-horn bull Lothario, bred by John Hare Powel, from the imported cow Moss Rose, and the Durham short-horn bull George, 30

Relinquished for a medal.

The second premium to Henry A. Carpenter, for Leopold, from Moss Rose, by John Hare Powel's half bred bull Rob Roy, - - - - - - - - 15

The third premium to George Sheaff, for Highlander, from Queen, by John Hare Powel's Rob Roy, - - 10

The first premium for Cows, not more than seven, nor less than three years old, to Benjamin Serrill, for his Kentucky cow Kate, derived from Parkinson's importation of short-horns, and Gough's breed, - - - - 30

The second premium, to Henry A. Carpenter, for Prize, by Denton, - - - - - - - 25

The third premium, to John Serrill, for Meadow Maid, from Benjamin Serrill's cow, by John Hare Powel's George, of Teeswater blood, - - - - - $10

The first premium for heifers, not more than three, nor less than one year old, to Thomas Smith, for Lucy, from a fine native cow, by John Tomlinson's bull Major, - - 20

The second premium, to Thomas Serrill, for Red Beauty, from his cow, derived from Ketland's heifer of Durham short-horn blood, - - - - - - 10

The third premium to Benjamin Serrill, for Violet, from Kate, by John Hare Powel's bull George, of Teeswater blood, - - - - - - - - 5

The first premium for heifers, not more than twelve months old, to Thomas Smith, for Sophia, by John Hare Powel's Rob Roy, from a Kentucky cow, derived from Parkinson's importation of short-horns and Gough's breed, - - 20

The second premium to George Sheaff, for Diana, from Steamboat, by John Hare Powel's half bred bull Rob Roy, 10

The third premium to Joseph Kersey, for Fill Pail, from a native cow, by Oakes, - - - - - - 5

The premium for the best ox, not more than nine, nor less than three years old, to Benjamin Serrill, for his brindled Ox, bred by himself, - - - - - - 15

The premium for the best steer, not more than three, nor less than one year old, to Henry Serrill, for his steer Durham, bred by himself, from a cow descended from Ketland's Durham short-horn heifer, - - - - 10

The following stock was exhibited, all possessing great claims to notice.

The Committee very much regret that they cannot reward the owners of more of these fine animals by premiums.

Your Committee are not directed to give their opinion upon such animals as have not been offered for premiums, yet they cannot forbear noticing the neat cattle which John Hare Powel has exhibited, although he has declined contending for a prize. His "Improved Durham short-horn" cow Flora, of five years, and her remarkable calf Hebe, of 8 months, by Rob Roy, particularly attracted their attention, and proved the justice of the award, which, at a former exhibition near Philadelphia, had given to the dam the first premium. His white heifer, Fairy, of three years, by the thorough bred "Improved Durham short-horn" bull Denton, from Prize, a half blood heifer, was marked by the strong points of the improved Durham stock.

His imported short-horn heifer Cora has many of the best characteristics of her race.

Yorkshire, of three months, from Cora, by the Durham short-horn bull Lothario, has the fine shape and good points of his sire.

Europa, begotten in England on the cow Assurance, by Mr. Curwen's bull General, has some very good points which show her claims to the high pedigree of the dam and sire, traced in the Herd Book to the year 1777, yet she exposes the effects of very bad keep and too early breeding before she was brought into this state.

Julia, of 3 years, has good form, with the marks of high breeding, but betrays the defects of Devon blood.

Laura, an imported heifer, of two years, has all the characteristics of deep-milking, and carries proof upon her carcase of tendency towards fat.

Flirt, of one year, from Julia by Denton, has good size, fine head, neck and bone.

Sussex, of 12 months, from Laura, was begotten in England

1.227

has long frame, small bone, head, horns and neck, and very strong points of high breeding.

Your Committee decidedly think, that in blood, points, and all the characteristics of fine neat cattle, John Hare Powel's breeding stock were generally superior to any on the ground, and had he not declined it, some of them would have been decidedly entitled to the first premiums.

John Tomlinson's seven heifers were marked by some of the good points of Holstein blood.

John M. Justis exhibited a large and well formed cow from Kentucky; also a one year old steer, with good frame and points.

Aaron Clement, two cows, two heifers, and a three year old steer, of good shape and size.

Thomas Smith, two large cows from Kentucky; and a fine two year old heifer, by Tomlinson's Major.

Benjamin Serrill, two remarkably large and well shaped steers, of four years, and one of a year, bred by himself, as well as three Kentucky cows, with strong points.

Henry Serrill, one large four year old steer.

Mr. Smedly, a very good three year old steer.

George Blight, an heifer of one year, bred by John Hare Powel, from Star, an half bred heifer by Denton, showing fine points.

James Hickman, two large fat oxen, worthy of particular notice.

George Sheaff, four large cows, two heifers under one year, one of them from an inferior common cow, by John Hare Powel's Rob Roy, showing by her excellence, the great advantage of crossing with the improved stock; also, the bull Tom Jones, which took a premium at a former agricultural exhibition.

John Serrill, two very pretty twin heifers, one year old.

Robert Clement, a well formed and very fat calf, five months old, by Kersey's bull Oakes from an inferior native cow.

Malachi Park, a large 3 year old cow, and a bull 16 months old.

Charles J. Davis, a bull and heifer of 18 months, worthy of notice.

THOMAS SMITH,
THOMAS SERRILL,
JOHN TOMLINSON,
MATTHEW ROBERTS.

SHEEP AND SWINE.

To the Board of Directors.

The Committee appointed to examine Sheep and Swine recommend the following premiums to be awarded.

The first premium for Rams not more than two years old, to John Barney, for his Ram of Dishley blood, - - $10
The second to Aaron Clement, for his Ram of Dishley blood, 5
The third to Joseph Kersey, for his Ram of Dishley blood, 5
The first premium for Ewes not more than two years old, to Joseph Kersey, for his Ewe of Dishley blood, - - 10
The second to Francis Hickman, for his Ewe of Bakewell and Irish blood. - - - - - 5
The first premium for Rams not less than two years old, to Aaron Clement, for his Ram of Dishley blood, - - 10
The second to Aaron Clement, for his Ram of Dishley blood, 5
The first premium for Ewes not less than two years old, to Joseph Davis, Jr. for his Ewe of Dishley blood, - 10

The second to Daniel Case, for his Ewe of Dishley blood, $5

The premium for the best Ram of Dishley blood not more than two years old, to Joseph Kersey, - - - 10

The premium for the best Ewe of Dishley blood not more than two years old, to John Barney, - - - 10

The premium for the best Ram of Dishley blood not less than two years old, to John Barney, - - 10

The premium for the best Ewe of Dishley blood not less than two years old, to Aaron Clement, - - - 10

The premium for the best Merino Ram not more than two years old, to Thomas Serrill, - - - - 10

The premium for the best Merino Ewe not less than two years old, to John Hare Powel - - - - 10

The premium for the best broad-tail Ram of Tunisian blood not more than two years old, to John Hare Powel, - 10

The premium for the best broad-tail Ewe of Tunisian blood not more than two years old, to John Hare Powel, - 10

The premium for the best broad-tail Ram of Tunisian blood not less than two years old, to John Hare Powel, - 10

The premium for the best broad-tail Ewe of Tunisian blood not less than two years old, to John Hare Powel, - 10

All the premiums awarded to John Hare Powel were relinquished for the benefit of the Society.

The premium for the best Boar not more than four nor less than one year old, to G. W. Sargeant, for his Leicester Boar one year old, bred by Gorham Parsons of Brighton, 10

Relinquished by G. W. Sargeant for the benefit of the Society.

For the next best to Benjamin Hickman, - - - $5
The premium for the best Sow not more than four nor less than one year old, to Francis Hickman, - - 10
The premium for the best Pigs not less than five in number, not more than nine, nor less than three months old, to Adley Brown, for a litter of six Pigs, - - - 10

SAMUEL WEST,
JOB ROBERTS,
WILLIAM EVANS,
REUBEN HAINES,
Committee on Sheep and Swine.

HORSES.

To the Board of Directors.

The Committee on Horses respectfully report:—

That among the seven blood horses exhibited before them, they are of opinion that the Arabian horse Grand Bashaw, owned by Joseph C. Morgan, is entitled to the premium of 50 dollars for the best thorough bred stallion;—that Planter Lyon, owned by Robert Long, is "the best stallion fit for draught," and is entitled to the premium of 50 dollars, but there were other horses shown, which are deserving of notice, particularly Stephen Webb's Chester county Lyon, Imlay J. Bennett's First Consul, and Joseph Kersey's Chester county bay:

That "for the best thorough bred brood mare," the Committee would recommend a reservation of the premium; nevertheless, several mares of considerable merit were exhibited, particularly Kate, a white mare, with a very fine Bashaw colt, own-

ed by John Elliott, and Gipsey, owned by Reuben Haines; also Kate, a bay mare, owned by John Hill:

That "for the best mare fit for draught," the Committee regret to say, that only two were exhibited, and that in their opinion neither of them is entitled to distinction by premium.

JAMES WORTH,
JOHN ELLIOTT,
JOHN G. WATMOUGH,
GEORGE BLIGHT,
AARON CLEMENT,
E. MORRIS,
Committee on Horses.

The premium for the best draught horses, "reference being had to their performance in the plough," was awarded to John G. Watmough.

The premium for the best yoke of oxen, "reference being had to their performance in the plough," was awarded to George Sheaff.

JONATHAN ROBERTS, President.
JOHN HARE POWEL, Corresponding Secretary.

Paoli, Chester County, October 25, 1823.

The Committee on Household Manufactures report:

For the best Linen Cloth, one yard wide and 29 yards long, to Charles Fish, of Philadelphia, - - - $15
For the best Carpeting, two pieces, 50 yards, to Joshua Evans, of Chester county, - - - - 10
Second best, 27½ yards, to Hannah Cope, of Chester county, 5
Best Hearth Rug, to Mrs. Parker, of Chester county, - 5

Best Woollen Knit Hose, two pair, to Elizabeth Kersey, of Chester county, - - - - - - - $3

Best specimen of Blanketing, to Joshua Evans, of Chester county, - - - - - - - 10

For the best Woman's Hat, made of straw, to the pupils of the Pennsylvania Institution for the Deaf and Dumb, - 10

For the second best Woman's Hat, made of *spear grass*, in imitation of Leghorn, to the pupils of the Fellenbourgh School of Philadelphia, - - - - - 5

For the best preserved Butter, 180 pounds, three months old, to Mrs. Dr. Harris, of Chester county, - - 20

In addition to the articles for which premiums are designated, many other articles of manufacture were exhibited, some of which the Committee deem worthy of notice.

A very fine child's gymp hat, and various articles of cotton and linen fabrics, by the pupils of the Pennsylvania Institution for the Deaf and Dumb.

A remarkably fine gentleman's Beaver Hat, manufactured by Edward Shelmerdine.

A specimen of book-binding, executed by David Clark of Philadelphia, highly creditable to his taste and workmanship.

The various articles manufactured by the pupils of the Pennsylvania Institution for the Deaf and Dumb, contributed much to the interest of the exhibition of household manufactures.

The Committee notices, with equal pleasure, the bonnet manufactured from *spear grass*, in imitation of Leghorn, by the pupils of the Fellenbourgh school, in Philadelphia.

STEPHEN DUNCAN,
WILLIAM DARLINGTON,
JOHN ELLIOTT,
Committee.

Paoli, Chester County, Oct. 24, 1823.

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SECOND ANNUAL EXHIBITION

AND

CATTLE SHOW.

The second annual exhibition of the Pennsylvania Agricultural Society was held on the fourteenth and fifteenth October, at Chester, in Delaware county.

The usual arrangements being made, the various committees proceeded upon their duties, and presented the following reports, which were, by the Directors, confirmed.

Mr. WORTH delivered an excellent address. The society afterwards assembled on the ground, where they were gratified by receiving the presidents and officers of the Franklin Institute, of the Philadelphia, Bridgetown, New Brunswick and Bucks county Agricultural Societies, as well as many distinguished gentlemen from Delaware, Carolina, Maryland, and other states.

The committee for neat cattle report, that they consider the following persons entitled to premiums:

John Hare Powel, for the best bull not more than 6 nor less than 2 years old, 40 dollars, for Bishop, an imported thorough bred "improved Durham short-horn bull," bred by Mr. Curwen of Cumberland. *Premium relinquished by Mr. Powel.*

Thomas S. Woodward, for the next best, 20 dollars, for Oakes, from a native cow by Cœlebs, an imported improved D. S. H. bull.

Henry A. Carpenter, for the next best, 10 dollars, for Lothario, bred by Mr. Powel, dam Rose, an imported D. S. H. cow, by George, a D. S. H. bull

Manuel Eyre, for the next best, 5 dollars, for Leopard, bred by Mr. Eyre, derived from Mr. Heaton's importation, of Teeswater blood, made in 1794. *Premium relinquished.*

John Hare Powel, for the best bull not more than 2 years old, 25 dollars, for Wye Comet by Blaze, dam White Rose, both bred by Mr. Champion, in England. *Premium relinquished.*

John Hare Powel, for the next best, 15 dollars, for Sussex, bred by Mr. Powel, sire and dam both bred in England. *Premium relinquished.*

Henry A. Carpenter for the next best, 10 dollars, for Leopold, bred by Mr. Carpenter, from Rose, by Mr. Powel's half-bred bull Rob Roy.

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John Hare Powel, for the next best, 5 dollars, for Rake, bred by Mr. Powel, by Bishop, dam Flora, an imported D. S. H. cow. *Premium relinquished.*

John Hare Powel, for the best cow, not more than 7 nor less than 3 years old, 25 dollars, for Shepherdess, a thorough bred improved D. S. H. cow, bred by Mr. Champion, in England. *Premium relinquished.*

John Hare Powel, for the next best, 20 dollars, for Fairy, bred by Mr. Powel, by the thorough bred, imported improved D. S. H. bull Denton, dam Prize. *Premium relinquished.*

John Hare Powel, for the next best, 10 dollars, for Flora. *Premium relinquished.*

Henry A. Carpenter, for the next best, 5 dollars, for Prize, a half bred cow, purchased of Mr. Powel.

Dr. Elmer, of New Jersey, for the best heifer not more than 3 nor less than 1 year old, 20 dollars, for Flirt, 3-4 blood, bred by Mr. Powel, by the imported bull Denton, dam Julia, grandam an imported Devon cow. *Premium relinquished.*

Henry A. Carpenter, for the next best, 14 dollars, for Lavinia, by Mr. Powel's half bred bull Rob Roy, from Star, a half bred D. S. H. cow.

John Serrill, for the next best, 10 dollars, for Cynthia, from Meadow Maid.

Henry A. Carpenter, for the next best, 5 dollars, for Meg, from a native cow, by Billy Austin of 3-4 blood, bred by Mr. Powel.

John Hare Powel, for the best heifer, not more than 12 months old, 20 dollars, for Coquette, by Bishop, dam Fairy, bred by Mr. Powel. *Premium relinquished.*

Henry A. Carpenter, for the next best, 15 dollars, for Charlotte, 3-4 bred, by Lothario, dam Prize.

John Hare Powel, for the next best, 10 dollars, for Jilt, by the imported improved D. S. H. bull Bishop, dam Lucinda, grandam Star, great grandam Milker. *Premium relinquished.*

Thomas Serrill, for the next best, 5 dollars, for Sylvia, dam Red Beauty, bred by Mr. Serrill.

John Hare Powel, for the best bull of Durham blood, 20 dollars, for Monk, bred by Mr. Powel, by Bishop, dam Virginia, by General, grandam, the imported cow Rosemary.—*Premium relinquished.*

Henry Serrill, for the best ox, not more than nine nor less than three years old, bred in Pennsylvania, 10 dollars, for Durham, bred

by Mr. Serrill, from a cow descended from Mr. Ketland's Durham S. H. heifer.

Thomas Smith, of Delaware, for the best steer, not more than three nor less than one year old, bred in Pennsylvania, reference being had to the mode of feeding, 10 dollars, for Bonaparte, from a Kentucky cow, by the bull Bonaparte.

In addition to the cattle which were distinguished by premiums, the following animals were presented:

FROM CHESTER COUNTY.

Mr. Joseph Davis's very large and well fed steer, cow, and bull calf, from Mr. Tomlinson's stock.

Mr. Edge's Baron, from Queen, by George, of Teeswater blood.

FROM DELAWARE COUNTY.

Mr. Serrill's Red Beauty, a fine three years' old heifer, and two very large well formed fat oxen.

Mr. Paschall's two years' old heifer Belle, of Holstein blood, possessing some remarkable points.

Mr. Henry Serrill's cow, bull calf Brier, and a calf by Mr. Eyre's bull of Teeswater blood.

Mr. John Serrill's very large and well formed cow, Meadow Maid, from Mr. Benjamin Serrill's Freckle, by Mr. Powel's bull George, her calf, and a three years' old steer, of good size and form.

Mr. John Cochran's fat steer, remarkable for his fine shape, great size and light offal.

Mr. Philip Morris's cow, exhibiting a fine form, and one of the fattest carcasses ever produced in the state.

Mr. Charles Justis's two heifers of Kentucky blood, seven spayed heifers, fifteen fat steers; all of which, by their good shape and fatness, evinced the skill and good management of their owner, to whom we owe some of the best individuals of the Kentucky stock which can be traced in his county.

Mr. Smith's fine heifers, Lucy and Dolly, by Mr. Tomlinson's Major, from a Kentucky cow, Black Susan, and a singularly fine spayed heifer, of the same breed.

Mr. Benjamin Serrill's cows, Rose and Perfection, heifer Clara, and two steers of Kentucky blood.

Mr. Oakford's Salem cow, and fat oxen.

Mr. James M'Ilvaine's working oxen.

Mr. William Eyre's cow, and large bull calf.

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FROM PHILADELPHIA COUNTY.

Mr. Manuel Eyre's yearling bull and eight heifers, all strongly marked by the "clean" heads and necks, and other characteristics of Heaton's stock.

Mr. Rhodes's bull, by Mr. Eyre's bull Leopard, derived from Heaton's stock.

Mr. James Cox's fine bull calf Blyth, from Mr. Powel's thorough bred imported "Improved Durham Short Horn" cow Shepherdess, by his imported thorough bred improved D. S. H. bull Champion.

Dr. Elmer's imported "Improved D. S. H." bull Durham, purchased of Mr. Powel.

Mr. Powel's imported cows Lady and Laura, and Virginia by General, dam Rosemary, thorough bred improved Durham short horns.

Julia, by the imported "Improved D. S. H." bull Denton, her dam also imported.

Fancy, an imported Chinese heifer; Fidget, of three-fourths Devon blood; Frolic, from Laura by Bishop; Virtuoso, from Fancy by the same; Jerry, sire and dam bred in England; a fine native cow; and Steamboat, a Kentucky cow.

Your committee do not attempt to designate the points or characteristics of the various animals which have been submitted to their view, as the display of nearly an hundred and fifty neat cattle of extraordinary excellence precludes the possibility of their adhering, in the present instance, to the rule which had been observed on former occasions; but they cannot avoid expressing their great satisfaction at the decided improvement which has been made in the stock, by the introduction of Mr. Powel's "Improved Durham Short Horns," whose blood can be traced in nearly all the breeding animals, which were distinguished as best fitted for the general purposes of the country, by uniting, with fine forms, the requisites for the *dairy* and the *stall*.

THOMAS SMITH,
THOMAS SERRILL,
MATTHEW ROBERTS,
RICHARD B. JONES,
C. CHURCHMAN,
Committee for Neat Cattle.

The committee for sheep and swine report, that they consider the following persons are entitled to premiums:

John Barney, of Delaware, for his ram, not more than two years old, ... $5

Joseph Davis, of Chester county, for the best ram of Dishley blood, not less than two years old, ... $10

Joseph Davis, for the best pen of Dishley ewes, not less than five in number, ... $10

Thomas Serrill, of Delaware county, for the best merino ram, $10

James M'Ilvaine, of Delaware county, for the best pen of merino ewes, ... $10

Robert Shaw, of Philadelphia county, for the best boar, $10

Mr. Barney's ewes maintained the high reputation of his well known flock, and largely contributed to the display of stock.

Mr. James M'Ilvaine, of Delaware county, exhibited a flock of 500 merinos, taken without selection from 1500, possessing good points and size, with *very fine fleeces* and healthful appearance.

Mr. Churchman's merinos were remarkable for the excellence of their wool.

Mr. William West exhibited a Dishley ram with strong traits of the imported stock.

Mr. Jonathan P. Worrell's ram, of Dishley blood, was large and well covered by his fleece.

Mr. Benjamin Serrill's fine imported wethers combined extraordinary size with good shape and singular fatness; his three native Dishley wethers and merino ewes were good specimens of their respective breeds.

Mr. Eyre showed some well formed sheep, very strongly marked with Dishley blood.

Colonel John Hare Powel exhibited the carcass of a sheep of mixed Southdown and Dishley blood, which we consider the best grass fed animal we have ever seen.

SAMUEL WEST,
JOB ROBERTS,
WILLIAM EVANS,
ELIJAH LEWIS,
SAMUEL DAVIS,
Committee on Sheep.

The committee for horses report, that they consider entitled to premiums—

Callender Irvine, for the best bred stallion, not less than 3 years old, $40, for "Windflower." *Premium relinquished.*

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Jacob Taylor, jun. for the best stallion, fit for draught, not less than 3 years old, $40, for "Black Planter Lyon." *Premium relinquished.*

John Taylor, of Montgomery, for the best colt, $10.

In recommending the award of the above premiums, the committee feel no small degree of diffidence. The claims of several of the horses were of the highest order. In point of action, figure, and blood, Buzzard, *Godolphin*, and Rattler, are entitled to marked distinction. Arab, by Grand Bashaw, and Standard, by Sir Solomon, bid fair, in due time, to assume their station among the first horses of the country. In noticing "Bolivar," it is sufficient to say that he was by "Windflower." Mr. Kersey's horse "Hickory" shows many of the points of the fine stock from which he is descended.

In recommending the award of the premium to "Black Planter Lyon," as the "best stallion fit for draught," the committee are by no means insensible to the merits of the other horses of that class which were exhibited: among them, however, it is deemed proper to distinguish Mr. Bennet's horse "First Consul," and Mr. Kersey's "Chester County Bay."

Grand Bashaw, which took the premium at the first exhibition, was viewed with great satisfaction, and lost nothing by his presence on this occasion.

MANUAL EYRE,
GEO. BLIGHT,
E. MORRIS,
JNO. G. WATMOUGH,
JOHN WILCOX,
AL. SYDNEY LOGAN.
Committee for Horses.

The following horses, were, in addition, exhibited:

Mr. Kendig's powerful and very active draught horse, Corn-planter.

Mr. Davis's Planter Lyon, which last year took the premium for the best draught horse, and was therefore excluded from the competition.

IMPLEMENTS OF HUSBANDRY.

The committee for implements of husbandry report, that they consider the following persons entitled to premiums:

Oliver Evans, for the best plough, ...	$10
Wm. S. Michener, for the best winnowing mill or fan, .	10

Your committee beg leave to state, that they consider Ezra Cope and Thomas Hoopes, jun. entitled to a medal, for their improvement of the mowing machine, which, notwithstanding the unfavourable circumstances attending its trial, has been decidedly proved to be worthy of distinction, as well for the singular simplicity and ingenuity of its construction, as for its rapid and effective operation. For Mr. Eastman they would recommend the award of a copper medal, for his straw-cutter, which has been so often noticed on similar occasions, that there is scarcely room for commendation.

Although Oliver Evans has been considered entitled to the premium for the best plough, they are not unmindful of the admirable and *well tried* plough of Mr. Suplee, and the ingeniously and well constructed plough manufactured by Mr. Wiley, Mr. Beach and Mr. C. Evans.

They cannot avoid noticing a churn, produced by Mr. Haydon, of Trenton, as it combines with other advantages, that of being easily made clean.

A neat model of Mr. Griffith's improved bee-hive was exhibited, which appears to be well fitted for its purpose.

A variety of ingenious and useful implements, were exhibited by Colonel Powel, viz: his Blockley Cultivator, his Dibbling Wheel, his moveable Sheep fold, his improved Yoke, and Ox cart.

REUBEN HAINES,
HENRY L. WADDELL,
JOB ROBERTS,
JOHN WILCOX,
Committee for Implements.

The committee for the trial of ploughmen with oxen report, that Mr. Cochran ploughed the eighth of an acre, an average depth of $7\frac{3}{4}$ inches, in 22 minutes, without a driver.

Mr. Caleb Coburn, the same quantity, an average depth of $6\frac{1}{2}$ inches in 23 minutes, without a driver.

Mr. Charles Justis, the same quantity, an average depth of $5\frac{1}{2}$ inches, in 27 minutes; they therefore recommend the award of the premium, for the best ploughman, with oxen, to Mr. Cochran.

JOB ROBERTS,
MATTHEW ROBERTS,
G. W. HOLSTEIN,
Committee.

The committee for the trial of ploughmen with horses report, that Mr. Wiley and Mr. Myers contended for the premium offered for the best ploughman with horses.

To Mr. Myers they recommend the award of a premium of $5

SAMUEL DAVIS,
SAMUEL WEST,
JAMES WORTH,
Committee.

The contest for the premiums, offered for the best ploughman, was the more interesting, as the competitors were well established farmers, who had not for many years applied their hands to the plough, but who were determined, by their example, to stimulate other members of the society to prove that they *practically* understand the use of the plough.

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The committee on household manufactures report, that they consider the following persons entitled to premiums, to wit:

Zillah Morgan, of Montgomery county, for the best linen cloth, shirting, one yard wide and not less than 25 yards long, $10

Isachar Hoopes, of Delaware county, for the best linen cloth, sheeting, one yard wide and fifty yards long, . . . 5

John Jones, for the best pair of blankets, two yards wide and two and a half long, ... 10

Mrs. Jonathan Roberts, for the best counterpane, . . . 5

Mrs. Margaret Wilson, for a pair of double coverlids, . . 5

Mrs. J. Roberts, for the best carpeting, one yard wide and fifty yards long, ... 10

GRASS AND STRAW HATS.

The pupils of the Pennsylvania Institution for the Deaf and Dumb, for the best woman's hat in imitation of Leghorn, 10

Hannah Smith, teacher of the Fellenbourgh school of Philadelphia, for the second best, ... 5

Pupils of the Fellenbourgh school of Philadelphia, for the best woman's hat made of straw, ... 5

The Walnut street charity school for second best, . . 5

Miss Frances Dunlap of Chester county, for a hat in imitation of Leghorn, ... 3

STEPHEN DUNCAN,
WILLIAM DARLINGTON,
JOHN ELLIOTT,
Committee.

MEMOIRS

OF THE

Pennsylvania Agricultural Society.

On the State of Agriculture, and the Application of Farm Labour in Massachusetts—breaking, feeding, and working, Oxen—the Culture of Indian Corn—the Advantages of Improved Short-horn Cattle for the Dairy and the Shambles.

By the Honourable Levi Lincoln,
President of the Worcester County Agricultural Society.

Worcester, (Mass.) Aug. 3, 1824.

John Hare Powel, Esq.
Corresponding Secretary of the Pennsylvania Agricultural Society.

Dear Sir,

I regret that absence from home and the pressure of my engagements have so long delayed an acknowledgment of your letter of inquiry upon agricultural subjects, by the receipt of which I beg you to be assured I felt both obliged and honoured. If my ability to afford practical and satisfactory information was in any degree proportionate to the ardour of my feelings and my sense of the importance of the object of our united pursuit;—the improvement of the business of husbandry and of its substantial results in the greater productiveness of labour; I should more deeply regret the little opportunity I have for communication and corres-

pondence on the subject. My farming however has necessarily from my situation, been but of secondary consideration, and my attention and observations frequently interrupted in a manner to preclude a very systematic account of its progress, present expense, or promise of future advantage; and I can speak with still less confidence of the experience of others. The present depressed prices of produce, and the high rate of wages in this part of the county are unfavourable to any great improvements in agriculture. This disproportion is most unreasonably great. Until within a few years a bushel of rye would pay for a day's labour at hay-making, while now the price of two bushels is hardly made satisfactory. The *smith's* bills, also an important item in the farmer's account of expenses is but little, if at all, diminished. From this and other like circumstances the business of husbandry is adversely affected. Less labour than would be advantageously applied to the culture of the earth is engaged, fewer and more imperfect implements are used, and a less careful and improving course of farming is pursued, than I trust, we should otherwise and every where notice. Still against all these discouragements, the agricultural interest in this neighbourhood must be considered as progressive. Perhaps in no part of the country is there more industry, more hours of time devoted to labour by the yeomanry, than in this county. They are early risers, and generally at work in the longest days before the sun, and with short intermissions for breakfast and dinner, until evening. I am inclined to believe that this habit of almost incessant labour is somewhat peculiar to the proprietors of our *stubborn soil.* The intervals between the cultivation and securing of the crops, and after the harvest, are usually employed in clearing new lands for improvement, in the erection of walls by which most farms are enclosed and divided,

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in the preparation of composts and in the transportation of the barn-yard manure to the field for use the next season. Providing fuel for the year, and the care of cattle, afford occupation for the winter. And I may well venture to say, that in our climate, and with our occasions for industry, the prudent farmer can have no *idle* time. The general tone of morals and the degree of information which is found to exist, evince a devotion of some *leisure* hours to the sources of intelligence and mental improvement.

You inquire the mode of "*breaking*, *feeding*, and *working* our oxen." The best broken oxen are those which are early trained and accustomed to the yoke with occasional light work. They are often broken as early as at one and two years of age, with gentle and patient usage. At this period they are more docile and tractable, and it is thought become more powerful, by being sooner accustomed to each other, and to the application of their strength to the draft. I believe they may be taught to travel in almost any gate; certain it is, the rate at which oxen differently broken, will walk with their load, would seem incredible to a person ignorant of the difference in the mode of their training. To accustom them to a quick pace, they should at first be driven in the yoke while young, without any, or a very light weight, and never heavily loaded, until they have arrived at full strength and maturity. A great fault with many people is too much indifference to the *construction of the yoke.* Almost any shapeless piece of wood, with holes for the insertion of the bows, is made to answer; but to the ease of the draft, the adaptation of the yoke or bow to the neck of the bullock, and the position of the staple and ring in the yoke, are altogether material. For common use and particularly for ploughing, I have found that yokes were generally too short. Cattle of the largest

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size require a yoke from 4½ to 5 feet in length. In short yokes they are apt to *haul* as it is termed, that is, draw *from* each other, and to such a degree in some instances, as to cross their fore legs, and destroy their power and greatly impede their progress. I once owned a pair made totally useless by this habit, and afterwards entirely corrected by the application of a yoke of 18 inches more length. A short yoke is necessary only in snow paths, where cattle would otherwise *crowd* against each other, the opposite of *hauling*, but of the same mischievous effect. In respect to what oxen may be made to do in a short time, or as an experiment upon their strength, I must refer you to the results of our ploughing matches and trials of strength. With us they are but little used upon the road, except in the transportation of heavy loads for short distances in the same town, or between neighbouring towns. One reason why horses are preferred for waggoning on the road, may be, that they can be made to travel quicker, and that from the construction of the hoof they are less liable to lameness, than the cloven-footed ox, by becoming foot sore. On the other hand, the patient and steady labour of the ox finds no substitute in the horse for the service of the farm, and the latter is seldom seen there except in occasional aid of the ox team, or with the light plough between the rows of corn. The value of a yoke of oxen, or a pair of horses, for use in all the business of a farm admits of no comparison. So decided is the preference for the former, that I do not believe a single farmer can be found in this extensive agricultural county who performs his labour by horses without oxen, while there are *hundreds*, I had almost said *thousands*, who make no other use of horses in husbandry than to furrow for planting, and plough among their corn for hoeing. Our oxen also, to answer another part of your in-

quiry, are kept in a cheaper and less expensive manner, than horses. In the summer they are uniformly grazed in the pastures. In the cold and winter seasons, they are put into the barns, and fed upon the *stock* hay, as it is called, that which grows in meadows, and upon the fodder of corn stalks, husks, &c., unless indeed they are more severely worked than usual, when hay of better quality is given them; and in all cases, as the spring advances, their keeping is improved, and with better hay, some grain is added. I speak of the general practice of farmers. There are some who keep their oxen more generously, and others more hardly than I have mentioned. But with a clean and warm stable, the daily application of the curry-comb or card, and coarse food, without *severe* labour, the best farmers will at all times exhibit teams of most vigorous and powerful cattle, and their best hay and their grain will be saved in their beef and pork, and in the produce of their dairies, for the market.

The culture of *Indian Corn* is much attended to by the farmers of New England, and most wonderful crops have been obtained here as well as in New York and elsewhere. Forty bushels of sound grain is quite as much as the average quantity to the acre, in the common mode of cultivation. By extraordinary attention my crops have usually exceeded this, varying from 60 to 80 bushels on good ground. My course has been usually, and as I believe most profitably, to break up the pasture lands, or old mowing lots, as soon as possible after haying, cross plough and harrow about the first of September, and sow winter rye at the rate of a bushel and a half of seed to the acre. In this manner I have never failed of a crop of from 15 to 20 bushels the next season. After reaping, the stubble and grass are turned in; and the next year, the field is well manured from the stable and yard, and the

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corn planted in hills, and hoed three times in the course of the season. The top stalks are cut after the corn begins to harden and before the frosts of the fall, and the corn is harvested in October, when perfectly dry and sound. The stalks of corn are, in my estimation, so valuable fodder for cattle, that I cannot but particularly advise to their careful preservation. When cut in the proper state and in good weather, they may be put the *same*, or the *next day*, into small bundles, and should be carried immediately under sheds or hung upon rails or poles to cure and dry. Thus secured they have a delightful flavour, and are eaten by every species of stock with the utmost greediness; and in value, I think, are equal to their weight of the best hay. The practice of stacking them for a long time in the field is both unnecessary and wasteful, and can only be pursued by those who are ignorant of their value.

Potatoes require much less labour in cultivation than Indian corn. They are a fine, improving and ameliorating crop for the soil, leaving it mellow and in excellent tilth. They are usually cultivated on rough land, with or without manure, and hoed once or at most twice. I think they pay for the expense bestowed upon them better than any other root crop. When manure is applied, the coarsest, even half-rotted straw and litter from the yard, is to be preferred. Potatoes are much used in the fattening of cattle, and boiled and steamed in the making of pork. I uniformly feed them to all my stock through the winter.

Upon the subject of "*Denton's*" progeny, I should fear to write to any one, less observing and sanguine than yourself. With nineteen of them, of different grades and ages in my possession, I can safely say, that my most confident anticipations have been entirely answered. I have now seven heifers

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in milk, four of them 3 years, and three 2 years old, and for richness in quality and abundance in quantity, they are not excelled by the very best cows *of any age*, of the native stock. A heifer of 3 years, with her second calf, has not been dry since she dropped her first, having given four quarts on the morning of her second calving. Next to the Merino sheep, I consider the introduction of the short horns, *in the blood of Denton*, as the richest acquisition to the country which agriculture has received. For the dairy and the stall I speak with the utmost confidence of their pre-eminence. From my three years old heifers I have calves of the most promising appearance, and greatly excelling any I have before seen. One of the heifers gives from 16 to 20 quarts of the richest milk, by the day since calving; the other a little less, from the circumstance of having been in milk continually for more than a year, but her milk is in no degree inferior in quality. The last season she gave eleven quarts at a milking with grass only, and this not unfrequently. They keep as easily as the native stock, and are as hardy. I have this year a three-fourths heifer calf from a half blood of Denton by *Admiral*, the famous bull sent out by Sir Isaac Coffin last year to the Massachusetts Agricultural Society, and two others by the celebrated bull *"Cœlebs,"* on *Denton's* half blood. They are fine promising animals, although in no respect superior to the *three-fourths* of Denton. I have no knowledge of the properties of this stock for labour, never having altered but one of the males. I cannot however perceive any reason to doubt their value in this particular. Their form indicates great power, and they have much quietness and docility.

It will give me pleasure at all times to hear from you; and I beg that this tardy and imperfect reply, too long to correct by any opportunity I have to transcribe it, may not discour-

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age your very interesting and highly esteemed communications.

Most respectfully, and with great esteem,
Your obedient servant,
LEVI LINCOLN.

P. S.—Since writing the foregoing letter, in conversation with Major Davis, a professional and agricultural friend, whom you will doubtless well recollect, he informs me, that a practical farmer, speaking of the stock of *Denton*, told him, that so decidedly superior were the calves in his neighbourhood, from a cross of the native stock with a bull of the half blood, that the victuallers would most readily distinguish and select them for the shambles in preference to all others, and that the farmers could well afford to pay an additional price for the use of a bull for this purpose. I am also indebted to the same gentleman for a confirmation of my account of this stock from his personal observation and experience. He has himself bred fine animals from *Denton*. Upon the subject of the keeping and working of our oxen, he has reminded me of the great superiority of their application by the yoke to the cart, over horses attached to a waggon. The greater weight which may be carried by the former, and the facility with which it is removed by *tipping up*, are of most striking advantage, in the ordinary business of a farm. It is said that a cord of green oak or hickory wood is not an unusual load for a yoke of oxen to bring into our market upon a cart, while it would certainly require the power of three horses on a waggon. The estimate of the relative expenses of keeping a pair of horses and of oxen, is in the proportion of 3 for the former to 2 for the latter, and to this is to be added the value of the ox for beef when his strength fails for labour. If your

farmers should once be induced to substitute the Ox for the *horse* in their ordinary business, it could not fail most essentially to advance their interests.

Respectfully,

L. LINCOLN.

ROBERT SMITH, Esq. President of the Maryland Agricultural Society, *on the Management of Dairy Cattle—the Distribution of their Manure—the Advantages of Steaming Fodder—the Arrangements of one of his Farms—and his Mode of accelerating the Production of Cream, by Culinary Heat.*

Baltimore, February 9, 1824.

Dear Sir,

You have asked me to send to you a statement of the arrangements of my dairy farm, Orange, two miles from Baltimore. This I am about doing, because it is a part of my creed, that an unreserved communication of our respective practices cannot fail to lead to beneficial results.

The barn is constructed according to the best Pennsylvania models. The yard is to the south of it. On the east and west sides are cow stables, containing 10 well made stalls, and well ventilated by a sufficient number of windows and double doors. In these stables are, in summer as well as in winter, several ranges of cattle, duly littered and properly secured, each by a chain and halter. At the tails of each range of cows, there is a drain made of strong planks—and so fixed as to receive all their dung and urine. These several drains have a sufficient declivity to carry all the fluid matter to their southern terminations, where they intersect simi-

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lar drains which convey all this liquid manure into a cistern fifty feet long. This cistern is so placed and constructed as to receive not only the urine of the stables, but also all the liquid matter of the farm yard. In it there is a pump, by means of which its contents are pumped into a large hogshead, fixed on a pair of wheels drawn by oxen. To the end of this hogshead is attached a box pierced with holes, into which this liquid manure flows through a spigot and faucet, and is then sprinkled over the ground as the oxen move forward.

For the purpose of augmenting the quantity and of improving the quality of the food of my stock of every kind, I have established a steaming apparatus. It consists of a boiler and two wooden boxes, in which boxes is steamed the food. These boxes contain each eighty bushels. By this simple apparatus every species of coarse vegetable offal is converted into nourishing food, and all the ordinary provender is rendered more nutritious.

In the dairies near Philadelphia, it is well known, that sweet butter of the first quality cannot be made but from cream *quickly* produced from *fresh* milk, and that whenever the milk remains many days to produce its cream, such cream acquires an unpleasant taste that is imparted to the butter.

Since the month of January, 1823, my dairy people have been in the practice of always placing the pans containing the milk in water simmering hot. The oily parts, which constitute the cream, are by such heat separated from the other ingredients, and then, from their specific lightness, they of course ascend to the top in the form of cream. Cream is thus obtained during the coldest weather in winter, in the

course of about twelve hours after the milk has been taken from the cows. And the operation of churning such cream never exceeds twenty-five minutes. The milk pans remain in the hot water about thirty minutes. The butter has invariably been of a fine flavour, and of a beautiful yellow colour; and in the nature of things, it never can be otherwise, unless the dairy women should be utterly ignorant of the art of making sweet butter.

It may not be amiss to state to you, that the skim-milk under this process, is a very pleasant beverage. In summer and in winter, it bears the agitation of a carriage without becoming sour. And every morning, throughout the year, a person comes to the farm and takes from 250 to 300 quarts, for which he pays two cents per quart cash, and on the same day he retails the whole among the people of the town, at three cents per quart.

The hot water in which the milk pans are placed, is contained in large flat wooden vessels attached to a stove. The water is heated by means of a flat tube fastened to the side and near to the bottom of each vessel, and introduced through an aperture into the stove. The heat of the stove affords the additional advantage of preserving in the dairy house, the requisite temperature during the winter season.

The dairy house is a stone building, consisting of three spacious apartments for the preservation of the milk, the cream, and the butter, and for the making of the butter. Two of these apartments are under ground and arched, and properly ventilated. To the south side is attached a convenient shed, with the requisite shelves, and with a copper boiler for the washing and keeping in good and sweet condition all the dairy utensils. In the front is a penthouse.

When I began, I really did not imagine, my dear sir, that

I should have subjected you to the fatigue of reading so long a letter. Be this as it may, I beg you to be assured of the respect with which I am, sir,

Your obedient servant,

R. SMITH.

JOHN HARE POWEL, ESQ.

Corresponding Secretary of the Pennsylvania Agricultural Society.

On Alderney Cattle and the Extraordinary Properties of their Milk.

BY REUBEN HAINES, ESQ. of Germantown.

As it is the implied duty of every member of this society, to contribute his mite to augment the great mass of agricultural information, which this association will doubtless collect, I cheerfully volunteer a short notice of the subject to which I have, as a farmer, devoted more attention than to any other, namely, *the selection of the best breed of cows for a butter dairy.* I have long been of the opinion, that in England particularly, the great breeding country, whence we derive our finest stock, too much attention was paid, and vast sums of money expended, in the vain endeavour to procure a race that shall excel in all the three great points of "the pail, the yoke, and the knife," as they are technically termed; and whilst other gentlemen were selecting the finest forms to feast the eye, and a carcass, which if well fed, would grow to an enormous size, I wanted a small animal, whose carcass was too valuable for beef, that would subsist on a small quantity of food, bear the heat and drought of our summer and autumn, and produce the greatest quantity of rich and delicious butter, in proportion to the food consumed.

In pursuance of this object, I procured a pair of cattle of the Island of Alderney, and to compare with them, imported from Ireland the celebrated Kerry cow, and from France the beautiful little Brittany. I soon satisfied myself that neither these, nor any other breed in the country would bear a comparison with the Alderneys; and an experience of now six years has tended to confirm that conclusion. Still it was said that the Alderney cattle were too delicate to bear our severe winters, and in compliance with the notion of the celebrated French naturalist, Buffon, that "man in America became a degenerate animal," and the stories raised by those whose interests led them to endeavour to obstruct the march of improvement in our gigantic country, by stating that the valuable merino sheep introduced into our climate, would no longer produce fine wool—so it was asserted, that although the imported cattle might maintain their individual excellence, yet their descendants would only partake of their good qualities in an inferior degree. My experience has been sufficient to refute these unfounded allegations. I have now a little full bred Alderney cow, reared on my farm, that will be only four years old next harvest. She had her third calf on the first of last month, and on the nineteenth, we made rather more than ten pounds of delicious butter from twelve quarts of her cream obtained from fourteen milkings, that is, in one week. Her only food through the winter has been good hay and brewer's grains; the latter article well known to be useful in promoting the secretion of milk, but not increasing the quantity or improving the quality of butter. One remarkable property of the cream of the Alderney cow is, the readiness with which it is converted into butter. The week in which we kept it separate, "it came," as the phrase is, in five minutes; and in churning it, mixed with the cream of other

cows, we usually have had the Alderney butter come first,* be taken out of the churn, and the operation continued half an hour or more before a second gathering of butter has taken place.

As I have now an increasing stock of this valuable breed, I hope in future to give some further authentic details in relation to their superior qualities.

To Jonathan Roberts, Esq.
President of the Pennsylvania Agricultural Society.

On various Breeds of Cattle.

By John Hare Powel, Esq. in answer to Mr. Haines.

Powelton, 1823.

Dear Sir,

I will venture to give the results of my experience, in the management of cattle, as my excellent and zealous friend, has emphatically alluded to those gentlemen, who do not exclusively direct their efforts, for the production of a "feast" for their palates, but regard the general purposes of our country in endeavouring to obtain, a race *unlike* the Alderneys, with "the finest forms, carcasses, which are *not* too valuable for beef"—oxen neither too feeble, nor too restive for the yoke—bulls not too vicious to be used—cows, which after having afforded "delicious butter" for the dainty and rich, and abundant supplies of wholesome milk for the poor, may be taken from the trimmed lawns of speculative amateur farmers, and be condemned, without loss to the knife.

I had ample opportunities abroad, I have most sedulously availed myself of all the means within my reach at home, to

* By what means could this be ascertained?—Ed.

obtain accurate information on the comparative merits, of the various breeds of neat cattle, of which we are possessed. I have had cattle bred in Kentucky, Maryland, Virginia, Maine, Massachusetts, Vermont, New York, and Pennsylvania. I have traced every importation, of which I had heard. I can distinguish Messrs. O'Donnell's, Patterson's, Gough's, Parkinson's, and Creighton's importations for Maryland—the Holstein, *Alderney*, Irish, Dutch, Flemish, Brittany, Pole and Short-Horn breeds brought into Pennsylvania, by Messrs. Sims, Cunningham, Ross, Waln, Hamilton, Ketland, Guest, Massey and Wurts—the families of various degrees of affinity, to the Teeswater race of Short-Horns, carried to New York by Col. Deveaux and Mr. Heaton—the Leicestershire, Lancashire and Hereford cattle, taken to Connecticut, Massachusetts, New Jersey and Maine, by Messrs. Wadsworth, Stewart, Edgar, and Vaughan. Of most of these importations I have had individuals, and of all have carefully examined some of the progeny either here or at a distance. For some animals of the breeds, which I designate, I had given great prices—yet the best of them I sold to Mr. Sheaff, for but sixty dollars a head, about the time I procured my high priced improved Durham short-horns.

Among my stock, Chinese and Devon heifers, also heifers and cows, bred upon our meadows and mountains, as well as Alderneys, have been placed, to decide the questions, which have caused among breeders, so much dispute All my experience has shown, that the extent of excellence in the animal, whether in points, properties, shape, disposition to early maturity, or tendency to secrete fat, or afford *rich* milk, is determined by the degree of affinity to the pure race of *improved Short-Horns*. That my Durham cows are good milkers—that they are *hardy*, have elastic pliant hides, with thick soft coats—

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that when dry, they are easily made fat—that whilst *yielding milk, they become thin*, has been proved to my entire conviction. May it not then be asked whether, although it is difficult to "blow hot and cold at the same time," it is not possible to blow hot in June, and cold in January.

The tendency towards fat, proceeds I should presume, from the power of the animal's stomach and intestines, to separate the nutritious from the excrementitious parts of its aliment. Nature wisely destines certain portions of nutritious matter, at proper times, for the secretion of milk. That milk is an unctuous and very nutritious fluid, cannot be questioned—much therefore of nutrition, is withdrawn by the milk, from the formation of fat—but does it follow, that such portions as have made butter, or *produced fat* in the calf, when no longer directed towards the secretion of milk, must necessarily lose all their properties and pass off in urine or in dung? Do we not invariably find, that all cows, when dry, become more readily fat, than when they give milk? Is it not then to be inferred, that the matter, which would have passed off in milk, may be made to produce fat? Does not our experience show, in all families of wild cattle, where the perverseness of man has not interfered with the dispositions of nature, that when kept quiet, and well fed, they exhibit great tendency towards the secretion of fat? In the cattle even of Asia, and China, in the Kyloes of Scotland, in the wild breeds of Louisiana, and in the little mountain cows of America, such disposition is generally shown.

The mistaken ingenuity of the breeders of Holland, whence all the deepest milkers, whether Holderness, "Old Short Horns," Holstein, or whatever they may be termed in America, are in some measure derived, led them into an absurd cross, which produced unthrifty animals, affording excessive

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secretions of *bad* milk—thus not only prematurely exhausting the cow, by which they are given, but requiring great quantities of food for her support. That disease, peculiar tendency towards fatness or leanness, or copious supplies of thin, or lesser quantities of rich milk, or even the determination of a particular colour to any definite part of the body, as white at the end of a Devon's tail, may be established, by perseverance and art, every man conversant with the subject will readily believe. Because a Hollander chooses to wear out his cow, or have a race of animals, which will not readily become fat, even when dry, and the cupidity of the venders of milk, in the neighbourhood of large towns in England, or America, has led them to propagate for one object this unthrifty breed of cattle, is it to be inferred, that the efforts of Colling's coadjutors could not obtain, by crossing, a race adapted to the general purposes of the country—fitted, at *different times* for the production *of rich milk* and *secretion of fat?*

Murray's System of Chemistry.—"The blood is a compound of this kind;" &c.—"And if we suppose a fluid thus passing through tubes of different diameters, and undergoing successive decompositions, we may easily conceive that very different products may be formed from the same compound. This affords a simple view of the nature of secretion. No complicated apparatus is necessary for the performance of the change; all that is necessary being the propulsion of the blood through minute vessels capable of contraction. It has accordingly frequently been observed, that new products are formed without the intervention of glands; such is the formation of the fat or of muscular fibre. It is easy to conceive that the formation of these may take place in the extreme vessels where these products are deposited, and in like manner in the mere course of the circulation, may be formed the

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gluten, albumen, and other principles of the blood itself. From secretion a variety of products are formed, as the bile, milk, fat, the bony matter, the matter of membranes, and a variety of others. These complete the formation of animal matter, and comprehend its several varieties. Such are the different steps of the process of animalization. The food is digested in the stomach, mixed with animal matter in the intestinal canal, and converted into chyle; this mingles with the blood, and loses a portion of carbon in the lungs: in the extreme vessels it is converted into the general principles of animal matter, and in the glands, is converted into various secreted products."

White, on the Formation of the Digestive Organs of the Cow.—Vol. 4. *chap.* 1. *page* 13.—"The stomach then may be considered both as a muscular and as a vital organ. If we view it in another light, we shall consider it as one continued bibulous surface, sucking up the chyle as it is formed, and conveying it by means of the milk vessels, to the four receptacles which are named the quarters of the udder. There is another order of absorbent vessels in the stomach, and in the small intestines also, especially in the upper part, named lacteals, which ramify through the mesentery, and terminate in the thoracic duct, having previously passed through what are named the mesenteric glands; that is for the most part, for some are seen going over their surface. These lacteals are subsidiary, in their office, serving to convey chyle when the mesenteric glands are inflamed and obstructed. Chyle, as we find it in the lacteals, is exactly like milk in every respect, and is, in fact, the same thing. The fluid of the thoracic duct is different; it is semitransparent, has always a little oil floating on it, and is now and then found mixed with a little blood, which proba-

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bly falls into it after death from the great vein in which it terminates. This depends on the valve of that part giving way, in consequence of death. Chyle and milk are then precisely the same thing, and in the cow there are three thoracic ducts, two going to the udder and conveying milk, and one to a great vein near the heart, conveying that fluid from which the blood is formed. When the animal has young, the lactiferous vessels, for so the minute branches of the two former thoracic ducts should be named, have a predominant aptitude to absorb the chyle, and a sufficient quantity only is taken up by the chyliferous vessels going to the third thoracic duct, to supply the heart."

I am, with great respect, yours, &c.

JOHN HARE POWEL.

JONATHAN ROBERTS, Esq.
President of the Pennsylvania Agricultural Society.

On Short-horn and Devon Cattle and their Management—On the Cultivation of Root Crops and their Importance—On Oxen and their superiority over Horses—and on the Prevention and Cure of certain Diseases with which Neat Cattle are assailed.

BY G. W. FEATHERSTONHAUGH, Esq.
Corresponding Secretary of the New York Agricultural Board.

Sir,

I had occasion, in a journey of fifteen hundred miles, made this winter, in the different States, to see a great many of the imported cattle, which have been brought to this country, and to examine the method after which their owners keep them during our rigorous winter months.

The particular satisfaction I received from the inspection of your well kept and valuable animals, at Powelton, has induced me to address a letter to you on this subject; in which I propose to offer some remarks arising from the observations

I have been enabled to make, and purely from a desire to be useful to the country.

With very few exceptions, the importations have consisted of the favourite breed now in Great Britain, "the improved short-horns." The exceptions are Devons, the blood of which is getting generally spread—a few Alderneys, and Lancashire. Of Herefords, which have been considered the rivals of the "improved short-horns," I did not see one. Of these, the Devons are considered an ancient race of cattle. That the variety is a permanent one, is certain from their particular form, their unvarying mahogany colour, and waving, curly skins. Thousands of oxen are to be seen throughout this country, somewhat lighter in colour, but bearing all the marks of this blood, except the yellow colour of the muzzle, and the ring round the eyes. No person can give an account when the blood was imported, and hence it is to be concluded that it was brought over on the first settlement of this country, and that it came from the Red Devons, then generally prevailing in England. The Devon oxen are considered, in England, smart walkers, and endurers of fatigue; qualities which distinguish the red oxen amongst ourselves.

The Herefords are an improved breed, and are thought to have sprung from the Devons. They have bald faces, with deadish colours, are large, and considered profitable as beef; they make strong oxen. So much pains has been taken with their breeding, that they may be considered now a pure, improved breed.

The improved short-horns are also, a pure, improved breed. The individuals resemble each other so much, that the most inexpert person can scarce mistake them. They are the largest of all the breeds. As far as their short horns go, they are to be considered a permanent variety; but the original

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short-horns, before the improvements took place, were considered a poor breed. The improvements effected for them what Mr. Bakewell did for the Dishley sheep, making them perhaps the most profitable breed in existence, if justice is done to them.

Many controversies are still carrying on in England as to the origin of these improvements, which would not excite much interest here. The appearance of these superb animals at once satisfies judges of their great value; and I believe we are all contented with the assurance that the animals we possess of that breed, spring from the celebrated bull Comet, sold for one thousand guineas, at Mr. Colling's sale, in 1810, and who was bought by Mr. Wetherill, from whose stock you procured your lately imported and very beautiful heifer.

Leaving aside the celebrity of this breed, which has been the inducement for its importation into this country, the proper inquiry for us is, "*how we ought to treat it here, in order to get the most money out of it, in the shortest period of time.*"

This breed is said to afford a greater quantity of beef, tallow and milk, than any other, in the same time, and is remarkable for its early maturity. Some of the cows are very deep milkers, and all fair ones. They are entitled to the reputation of good milkers; but it is only now and then that a cow giving from 30 to 40 quarts a-day is to be met with. This propensity to convert all the food into milk is sometimes met with in individuals of other breeds. The property of being very deep milkers, therefore, is to be considered accidental, rather than one which can be continued with any certainty in the breed. Take one short-horn with another, no breed is more valuable for its milk, or keeps in better condition, under the same circumstances, or goes to beef at less ex-

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pense, or furnishes more money and manure in a given time. In order to keep up these great qualities, we must remember, that in their native country, it is considered indispensable to keep them extremely well, and in a very different manner from the general custom prevailing here; which is, in summer, to leave cattle to help themselves to what they can find, even in the most severe droughts; and in winter, to give them a moderate quantity of hay and straw. In England, where they are less troubled with dry weather than we are, they have always green crops and roots to give to them, and they give them in abundance. It is there considered, the higher this sort of keep, the better the health of the cow, the richer her milk, the stronger her calf, and the greater the quantity and value of the dung. If all this provident attention be necessary in that moist climate, it is certain that the breed will degenerate with us, if it is not kept in high condition. Hot climates produce shallow milkers; and where exceptions occur, they get poor very fast when indifferently kept, and it becomes more expensive to recover their condition than to keep it up. The wear and tear of condition in deep milkers, is very great, and is only to be checked by abundance of succulent food and roots; or where they are not to be had, by occasional feeds of meal with their hay.

And it is here, I am sorry to remark, that some of the imported short-horns I have seen, requiring all this care and attention, seemed not to receive a greater share than the common cows, getting some hay twice or three times a day, and nothing else. This remark is by no means meant to be general, and is perhaps owing to a particular fact, that many of the importations of cattle have been made by persons living in the vicinity of towns, who are not farmers, and having been sufficiently gratified with the sight of their animals, trust

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them through the winter to men who have neither the means nor the knowledge to discriminate betwixt one cow and another.

Persuaded that the agricultural interest will receive all the benefit of the liberal encouragement these persons are giving to it, I feel grateful to them; and desirous too of attracting their attention to a subject of great moment to the country, I would suggest the propriety of their considering the most efficacious manner of preserving the valuable breed in their hands, and of spreading it rapidly into the country adjacent to them.

And first, as to the readiest and cheapest means of keeping them well.

The extreme expense of cultivating and securing an acre of roots, either turnips, carrots, or mangel wurtzel, may be stated at $30. That acre ought to produce 500 bushels at the least. This quantity, feeding it out at the rate of two bushels a day, to a milch cow, will last her eight months, from the middle of October to the middle of the next June. The remaining part of the year she can be pastured, or green clover, green corn, or green millet can be given to her. With these roots, of course, she is to have some hay.

Some persons have objected to me the expensiveness of this plan; that turnips and carrots are always worth twenty-five cents a bushel in the market, and that it is a piece of extravagance to give a cow $125 worth of roots in a season. This is an idle objection. The real question is, whether an animal which has cost perhaps four or five hundred dollars, is to be permitted to degenerate upon dry hay, or whether her condition is to be kept up, at an *apparent* extra expense of $30, which the health of the animal, every day's milk, every calf, and the valuable dung, more than repay.

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Occasional mashes of bran, and clean slops, will also assist to keep her in fine health.

Believing that a careful cultivation of roots, and particularly of turnips, is the basis of good husbandry, it is the frequent subject of conversation between other farmers and myself, and it is remarkable how many objections they make to drilling turnips, to conceal their distaste to a great innovation upon their old habits, or to exchanging the plough for the hoe. One of my neighbours frankly confessed to me, this summer, on being pushed a little hard, "that he considered piddling and hoeing along with a few turnips, as no farming at all." The general complaint is, that they won't grow. Every man has taken the greatest pains, "but somehow they won't grow." I should have been almost tempted to believe this partially, if I had not heard the same thing too often from my own immediate neighbours, whose modus operandi I am well acquainted with. But a few premiums on turnips have changed matters with us; we had very handsome specimens of turnips last year, and the next year it is probable we shall have a dozen competitors, which gives me great satisfaction, remembering a few years ago, that turnips, in this town, had never been seen out of the garden patches.

But, on my late journey, I have heard it frequently objected, that the turnip system, on a large scale, will never prevail here, because we cannot eat them with sheep on the ground, on account of the rigour of our winters.

Now it is probable, with me, that the disparity of climate operates practically in our favour. For frequently whole crops of turnips rot in Great Britain, from violent changes in the weather, and the foundation of many of their disorders in sheep and cattle may very well be laid, when they are poaching about in water and mud, to get an uncomfortable bite in

the turnip field. Here we have cellars and contrivances to keep them safe and sound into June; (Swedes) we draw them all off the ground, and waste none. They are all eaten clean up. Our straw is advantageously made into manure by their aid, and economically saved in the yards, to be afterwards distributed on the land *at pleasure.* Feeding them off where they grow, independent of objections already made, necessarily occasions great waste—those that are bitten and left, soon begin to decay—many are fouled with treading, and frost is sure to destroy a great portion of the crop.

On my farm, where there is a very heavy stock to keep up, we have been feeding turnips the whole winter. The white Norfolks are finished; we are just (March 15) beginning the yellow Scotch, and have four and an half acres of Swedes to commence upon in April. The lambs, finding plenty of milk, are stout and frisking about, and all the animals on the farm are in good health.

Whatever objections there are raised, I for my own part believe that good husbandry in this country, depends a great deal upon the successful cultivation of turnips. I have succeeded in it for ten years. The turnip crop engages my attention more than all the rest, and a very intelligent agriculturist from one of the best farming districts in Scotland, who favoured me twice with a visit last summer, declared, speaking of a field of nine acres of turnips where we stood, that he never saw a heavier or a healthier crop in Scotland, and that he was persuaded our mode of using them was more advantageous than that of feeding them on the ground.

On the other hand, it may be true that turnips are a precarious crop in some districts, and hence it is very satisfactory to know that many persons are turning their attention to mangel wurtzel and carrots. A gentleman from Dutchess county

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communicated to me that he had kept his ewes upon mangel wurtzel the last winter, and that he had already 250 lambs in the best health. It may be that this root and carsots are more suited to cows than turnips, which impart a flavour to the milk, but animals to be kept well should certainly have abundance of some sort of succulent root.

It will now be for the consideration of the proprietors of these fine animals, whether they will keep them up all the year round upon the soiling system or not. There are many things to recommend this plan, which has been pursued with great steadiness by a distinguished friend to agriculture in Massachusetts, who belongs to one of the learned professions. Mr. Curwen, in England, who is great authority on this subject, in order to enable him to soil in April and September, the most difficult months for green food, sows his early turnips in May, and draws them in August; so that he can feed turnips from 20th August to 20th May succeeding. The remaining three months, he feeds with green clover, tares, &c. Turnips and straw are what he relies upon for his cattle, with occasional steamed chaff and salt; and never gives them corn, oil cake, or hay. By this management he makes a sweet beef without the rankness of oil cake, and converts all his straw into the best manure, keeping his grain for sale. In a well pursued system of soiling, the manure being thus carefully saved, and economically spread on the grass, the produce will not only be very much increased, but every part of it will be consumed. Where cattle graze out of doors, they unavoidably destroy much of the herbage by poaching, lying down, and dunging the grass unprofitably. Another great advantage is having animals continually under the eye. On all these accounts soiling is a very commendable practice, and on a small scale may be very well attended to here. By

some, however, it is thought not to be as healthy as the natural mode of living, and that deep milkers, for want of exercise, go to flesh too rapidly, and thus in time the propensity to milk may be overcome by a propensity to beef. Means may, however, be devised to give them exercise; and for myself I should not be afraid to risk their value as milkers if a proper attendance upon them could be ensured. There are reasons for believing that the faculty of giving milk may be increased, by milking them carefully and systematically from the first calf, stripping every drop from the udder, and milking them, if necessary, three times a day. By negligence, too, this faculty may be diminished.

Having considered how their condition is to be kept up, an important inquiry is, how they are to be made most profitable to the owners and to the public at large.

It is reasonable to believe that imported bulls have been well selected; for patriotic individuals, who import for the benefit of the country, as well as those who import to improve their own stock, have probably taken pains to secure something worth the money they pay. A first rate selected young bull, from the hands of a known breeder, is rarely to be had under $400, to which are to be added the expenses of importation. Judging from what has passed around my neighbourhood, connected with the Bakewell sheep, I am of opinion that a moderate price of perhaps $5 for serving each cow, would be more profitable to the owner and the public, than double or treble that amount. An extravagant price keeps the good cows away frequently; a moderate one brings them all on. I know a farmer who asks $5 for every good cow, and $10 for every bad one. I have been for years in the habit of observing the conduct of a person who asks $25 to $30 for a ram lamb of the Bakewell breed, who has lost gra-

dually all his customers, whilst those who have continued to take $10, have made money every year. A moderate price enables a man to do a great deal of good to the country, and to do justice to himself at the same time.

Those, again, who possess imported cows, should be careful lest by injudicious breeding, they change the constitutional habits of the race. Cows with a strong tendency to become fat, are rarely good milkers, and are considered uncertain breeders. It is important, therefore, to inquire into the character of the male the cow is to go to, and to inspect and inquire into the value of his stock. Whilst these fine cows are scarce too, it is matter for reflection, whether the practice of drying them up for several weeks before calving, in order to strengthen the calf, is a good one. It is true, that milk drawn to the last moment, may be said to come at the expense of the calf, yet if the cow has as much as she can eat, and gives milk freely to the last, shall we check nature itself upon mere speculation?

Admiring this fine breed of animals as much as any man can do, I would ask, "can they be further improved in this country, by crossing them with what we have got?" or are we invariably to continue to breed from the same blood? Is the breed to be extended until it becomes the general stock?

This ought to take place, in consideration of its producing *the greatest quantity of beef, tallow and milk, in the shortest time*, if it were not for an important item in husbandry, *the labour animals are capable of furnishing*. The Devon blood appears to produce the best oxen, and these oxen make as good beef as any other blood. I live in a country where the settlers have been very extravagant on the subject of horses, and feel it my duty to correct an expensive habit, by substituting, if possible, the labour of oxen for that of horses.

I shall not repeat the arguments in favour of ox labour here, yet one consideration is not, I think, sufficiently urged.

We take care of our horses from the earliest period: stable them, break them to paces, rub them down, feed them grain, pay them every attention, and when they get old they are worth nothing.

What sort of horses should we have, if we were to wean foals when a few days old, keep them on skim-milk, and let them run without shelter upon a little hay during winter?

What sort of oxen should we have, if the calves ran till winter with their mothers, were well stabled and kept, were brought up kindly and to hand, accustomed to hold up their feet, rubbed down and broken to paces? Would they not do as much farm work as horses, not eat half as much, and when arrived at a proper age, be more valuable than ever?

Having this object of ox labour much at heart, I have adopted a method of promoting it, which I hope will succeed.

I acquired a full-blooded Devon bull, for the express purpose of breeding oxen, but being rather under size, which they generally are, he was not a favourite here. I therefore took a calf out of an imported short horn cow, by him, which fortunately happened to be a bull: he is now a year old, and is almost as big as his sire. I have never seen a finer animal of his age. Through him I hope to see oxen bred here, that have both size and smartness. I am very well satisfied with having done it, though many critical breeders will consider me quite out of rule.

Every thing connected with the profit of animals, depends upon their keep. The observations made in my late journey, have sufficiently confirmed me in this opinion. The inquiries it occurred to me to make, respecting the diseases incidental

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to cattle in different parts of the country, produced many statements about them, where the blame was usually laid any where but at the right door. A personal examination always convinced me, that negligence was the universal cause. One statement, however, has got before the public, and deserves to be mentioned here.

A report was made by Dr. Dand, in June, 1822, to a medical society in New Hampshire, "that young neat cattle cannot be raised at Burton, N. H. and that cows and oxen cannot be kept there, without being afflicted with a singular and fatal disease." In describing the symptoms, he says, "they are usually attacked by it at the close of the winter; its commencement is marked by a loss of appetite, the animals refusing hay, grain and salt; they become feeble and much emaciated, and obstinate costiveness accompanies the disease: but the abdomen becomes smaller than in health; the abdominal muscles are contracted towards the spine, and the whole abdomen is diminished to one-third of its bulk. After these symptoms have continued an indefinite time, a brisk scouring comes on, and the animals fall away and die."

The author of the report is of opinion, that the waters of the country, being *tainted with muriate of lime*, occasion the disease. He states that "Burton would be a flourishing agricultural place, if neat cattle could be kept and raised there," yet admits that "cattle, when thin and emaciated, speedily become fat, and appear better than cattle ordinarily do, during the first season they are pastured in Burton." And this also, he attributes to the stimulating qualities of the same muriate of lime.

If all this be so, the Burton farmers would do well to buy lean cattle, and fatten them, and turn them off the first season.

As to the muriate of lime, it may be so, yet there are many known districts where the same circumstances obtain, without such evil consequences. It requires a great effort to believe the whole waters of a district to be poisoned. From the circumstance of the animals fattening so rapidly the first season, the case looks analogous to the known one of "predisposition to rot," but as the writer of the report has not stated that any one of the animals were opened, and that flukes were or were not found in them, it cannot be useful to say any thing on the subject.

The symptoms of this disease are not detailed sufficiently, to enable a practical farmer to compare them with those which accompany known diseases. Such symptoms as are stated, are those of *general inflammation and fever*, as often exhibited, in *mountainous countries, where the cattle are poorly kept, and are unhoused during a long and rigorous winter.*

I remember, in former times, often visiting an elevated district towards spring, where the same spectacle was common to both sheep and cattle, and upon making inquiries of an old cow doctor, named Robbins, of the cause of the rot so generally prevailing at that unusual season, he observed, "that when creatures could get nothing to digest, towards the end of winter, they had to make free with their guts pretty much, when warm days came on."

The diseases of cattle ordinarily arise from too high feeding, or too low feeding. In the one case the digestive powers are embarrassed, in the other they are not sufficiently exercised; and in both, the animal suffers. Few diseases are known in this climate, especially in elevated situations; and animals regularly, yet plentifully fed, and well housed in

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winter, are generally healthy. But when neglected in winter, they fall away; their legs, ears, and horns become cold; they become hide-bound and a prey to consumption. If, then, on the return of fine weather, they are turned into rich feed on marshy lands, they are often affected in the joints, and swell in blotches: the hide loses its mellowness, and becomes rigid. Calves show it sometimes after a drought; and when the quarters have a tendency to mortification, it is called the quarter evil. Free bleeding, taking a gallon or more from a full grown animal, and less in proportion, is considered indispensable in the first stage of the complaint, which is marked by the dulness of the animal, and a loss of the comeliness and mellowness of the skin. The materials of cow-doctor receipts are not always easily obtained, and are only fit for quack doctors to swallow when put together. But simple remedies may be relied on. Those who possess valuable cattle should always have a quantity of castor oil on hand: four or six ounces of it, with a handful of common salt in a pint of warm water, is a safe dose for a grown animal, and careful attention and regular feeding afterwards.

If cows are kept too fat in calf, there is danger of an inflammation of the womb: this sometimes causes death, and is called, in common parlance, milk fever. Bleeding and laxatives are the proper remedies. Drenches with opium, aloes, turpentine, &c. &c. make a great show in the books, but it is far from being certain that they are useful.

Three years ago I observed a meadow of white spear grass, with long spurs of ergot hanging to the heads; this was produced during some muggy close days: fearful that the deleterious quality of spur (ergot) in rye, might be common to this, I had the hay thrashed before it was fed out, and had no

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sick animals that spring. The farmers of Burton should look to their meadows. It is possible for stock to be poisoned in this manner.

I remain, sir, with great regard,

Your obedient servant,

G. W. FEATHERSTONHAUGH.

Duanesburgh, (New York,) March, 1823.

JOHN HARE POWEL, ESQ.

On the Importance of Neat Cattle to our Manufactures and Comfort—their various Products, &c.

BY JOHN HARE POWEL, ESQ.

Powelton, Philadelphia County.

Dear Sir,

I have the honour to present, various selections from European works, to establish certain positions, which have been assumed, in some of my late communications. In corroboration of the facts, which have been alleged, I produce for publication, part of a letter, from Major Rudd, a gentleman of high standing in Durham, distinguished alike, by his zeal and success, as an improver of Neat Cattle and Sheep.

I am aware, that it has been hinted, that too much discussion, had arisen, on the properties, of farm stock; but I may object, that no subject is more interesting, and none more important to the husbandmen, and landholders, of the eastern, middle, and western States, than that which indirectly involves the application of three-fourths of the product of their labours, and of their lands. I apprehend, that not more than one-third, of *their* cultivated soil, is annually subjected to the plough; that of its produce, except small quantities of hemp,

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and flax, the farinaceous parts of wheat, buckwheat, and a portion of rye and Indian corn for whiskey and bread, nearly the whole is employed for the nourishment of Neat Cattle, Horses, Sheep, and Swine.* Thus, without regarding the immense forests, whence we derive our principal supplies of beef and mutton, and I should hope, ere long we shall receive the greater part of our wool,—I think it is evident, that to our population at least, it is worth some effort to ascertain, whether experience, has established, in the country, where they are best known, and by the standard, which every man can best comprehend, the superiority of one race of Neat Cattle, over every other, either original or *improved.*

If it shall appear, that, by the multiplication of this race, "the produce of beef upon a given extent, of land, would be nearly doubled"—the quantity of butter increased—the facility of procuring powerful oxen for draught, not lessened—and withal, that the amount of offal, would be diminished—the weight of flesh, and of fat, would be carried upon the proper parts, I trust it will not be contended, that the discussion is futile, or the premium absurd, which shall have brought this race, more generally into view.

No man will deny the importance of the animal, whose milk affords butter, cheese, and various combinations for his table—whose hide, gives leather for machinery, harness, and his shoes—whose hair, supports the plaster upon his walls—

* In the best districts, there will generally be not less than one-half of the land employed in raising roots and green crops for live stock, and not more than two-thirds of the inferior soils are always under these crops and in pasturage. Probably not more than two-fifths of even the arable land, or ten acres in a hundred of the whole surface, produce crops immediately applicable to the food of man. The remaining ninety acres, after a small deduction for fresh water lakes, are appropriated to the breeding, rearing, and fattening of live stock." (*Sinclair's General Report of the Agricultural State and Political Circumstances of Scotland.*—vol. 3, page 1.)

whose horn, bone and blood are employed in manufactories, or converted into articles constantly in use—whose tallow, and fat, are consumed in candles, and soap, necessary to his comfort, and health—whose heels, afford oil, valuable, in many pursuits—whose stomach even, constitutes an agreeable repast—whose tail is converted into a couch for his indulgence, or repose—and whose patient offspring, after having enabled him to reap the harvest from his fields, yields the most wholesome, and nutritious food for his frame, and finally by offal enriches the soil.

It appears by Bailey's Survey of Durham, that at Colling's sale in 1810, seventeen cows were sold for 2,802 pounds 9 shillings sterling—eleven bulls for 2,361 pounds—twenty-eight animals, thus produced $22,948 67. That Major Rudd paid 400 guineas for Lady of 9 years—for Lily 400 guineas—for Peeress 170 guineas—for Petrarch 375 guineas; that Messrs. Wetherill & Co. paid for Comet of 6 years, 1000 guineas. Mr. Champion, and Col. Mellish have since paid 450 guineas, for the services of Charles, during 2 years. A regular record is kept, in the Herd Book, of the pedigrees, of the animals of pure blood. Although one hundred and forty breeders—130 bulls and nearly 3000 heifers and cows, are enumerated in this volume, it will be seen, by Major Rudd's letter, and by the prices, which I have paid, that their cost, continues to be as high, as it was ten years since.

If it were regulated by the caprice of men of fortune, it might be alleged, that fashion gave to them, a fictitious value; but as the practical farmers of England, sanction it by their purchases, and support it by their demands, it must be inferred, that after a trial of fourteen years, the animals possess the merit, which has been claimed. To show the interest, which they have excited not only in England, but in this country, I

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could mention the names of some of the most distinguished gentlemen of Massachusetts, one particularly, of Worcester county, who notwithstanding, the various, and important duties of his high public station, manifests, in his agricultural pursuits, the most extensive scientific acquirements, and in *their results*, New England matter-of-fact skill.

He observes—"Next to the merino sheep I consider the introduction of the Short-Horns, *in the blood of Denton*, as the richest acquisition to the country which agriculture has received. For the dairy and the stall I speak with the utmost confidence of their pre-eminence. From my three years old heifers I have calves of the most promising appearance, and greatly excelling any I have before seen. One of the heifers gives from 16 to 20 quarts of the richest milk by the day since calving; the other a little less from the circumstance of having been in milk continually for more than a year, but her milk is in no degree inferior in quality. The last season she gave eleven quarts at a milking with grass only. A heifer of three years with her second calf has not been dry since she dropped her first, having given four quarts on the morning of her second calving."

I have in my importations, and purchases, sought the stock, of those breeders, who have regarded *the milking properties*, not less than the propensity to become fat.

Mr. Curwen, who as the able promoter of the agricultural interest both in Parliament and his county, is generally known, evinces great anxiety for the dissemination of this breed. In his excellent report, to the Workington Agricultural Society, after reciting, the origin, of the different families, of Short-Horns, upon his estates, mentions, those, which "IN UNITING THE TWO ESSENTIAL QUALITIES OF MILKING AND FATTENING are highly valuable;" and adds, "two heifers

and a bull, were this spring forwarded to Thomas Law, Esq. at Washington; from friendship and connexion—as well as the desire to support the credit of my farming, the very best specimens were selected. The steers, which have been bred, and slaughtered, have been equal, *in quality of beef to any thing I could have expected or desired.* At two and a half years old they weighed from 80 to 85 stones of 14 pounds each, equal to 1120 or 1190 pounds," although reared in the usual mode, upon turnips, chaff, and straw. In mentioning the draught oxen on his farms, Mr. Curwen observes, "those which are now at the Schoose, were produced there, and are of the Short-Horn breed. William Eve, who has long been with me, and is accustomed, to the working of both *Devonshire* and *Herefordshire* cattle, is of opinion, that the Short-Horned, are quite *as quick as the former*, and *as powerful as the latter.*"

I have for some time, bred from the bull, and an heifer, begotten in England by General, Mr. Curwen's best male, upon one of the heifers, sent to Mr. Law.

These animals, as well as my importations, from Mr. Wetherill, and some of those bred by Mr. Champion, have every claim to excellence which high pedigree can establish. Comet, Peeress, and Lady, sold to Major Rudd, and Mr. Wetherill, were the grandsire and grandams, of some; Charles, which had been hired, during two years, for 450 guineas, was the great grandsire of another. Mr. Wetherill states, that the animals, which he had sent to Mr. Williams and myself, were of his "*very best blood*"—those from Mr. Champion, have his highest commendation, and are fitted he declares, for "milking, and fattening." It must be observed that unless the pedigree be traced on *both sides*, the animal cannot be admitted, as one of pure blood. Some of the bulls and cows, which have

been brought on speculation from England, are not worth half their cost. A flourishing account is given, of Comet, or some celebrated bull, named as the grandsire; the sire if from a native cow, would, nevertheless, be not more in technical language, than an half bred, his offspring from a native cow would be a quarter bred calf, whose progeny, from a native cow, would possess but one-eighth of improved short-horn blood.

I am, Sir,

Your obedient servant,

JOHN HARE POWEL.

JONATHAN ROBERTS, Esq.

President of the Pennsylvania Agricultural Society.

Marton Lodge, near Stockton on Tees,
England, March 26, 1824.

Sir,

I have been honoured by your letter of the 15th ultimo, and you may be assured, that I have a great pleasure in giving you the information which you request. I have been for many years a zealous agriculturist, and friend to the improvement of the breeds of cattle and sheep.

I have long enjoyed the friendship and intimacy of Mr. Charles Colling, to whom the world is indebted for the breed of cattle called the improved Short-Horns. Residing at no great distance from him, I was in the constant habit of witnessing his experiments, and when his celebrated stock of cattle was sold, in the year 1810, I became the principal purchaser. From this circumstance, my name acquired that notoriety amongst agriculturists, to which you do me the honour to allude. I perceive from your letter that you have visited this country, and I see that you are acquainted with the principal points, which are here considered to constitute

symmetry in cattle. A small and fine head—a capacious chest—the shoulders lying back in the body—the ribs round and barrel like—the back straight from the neck to the top of the tail—the loins wide—the hind quarter long and straight—the twist full and deep—the bones small, and offal light: such are the principal points attended to, by the breeders in this country. To these points of shape must be added, the great essential of *good handling*. This, I observe, you do not mention in your letter.* It was formerly not considered in this country, but has now become essential, since it has been discovered to be the *touchstone* as it were, or *index*, of the propensity to fatten. A knowledge of good handling cannot be communicated by letter, and is acquired only by practice. It consists in a peculiar feel of the flesh under the skin. The skin should be rather loose, and under it the flesh should feel rather soft, yet firm and elastic. When a beast has this peculiar handling, and has long, soft, silky hair, it indicates that propensity to become fat in a short time, which constitutes the peculiar merit of the breed. In order therefore, to constitute a bull or cow of the highest order, we consider an union of fine form, with the above handling and silky hair, to be indispensable. It was from possessing this union, that the breed as improved by Charles Colling, became so celebrated and in such request, that his bull Comet was sold by public auction for one thousand guineas. The cattle as thus improved, become fatter and heavier at two years old, than the old breeds are at three, and even four years old.

The importance of this improvement to this island, can scarcely be calculated, for if this breed was every where disseminated, the produce of beef, on a given extent of land, would be nearly doubled.

* I have always regarded handling, as much as points.—P.

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If cows of the deep milking kind are wanted, where milk *alone* is the object, as is the case near the great towns, they must be sought for amongst the old breed. The milk of the improved short-horns is *richer in quality*, but less in quantity. An improved short-horned cow, will yield about eight or nine pounds of butter per week, avoirdupois weight. I have heard of cows of the old breed producing more than twenty quarts of milk per day, yielding about twelve pounds of butter per week. These, however, I believe are now very rare. I need not observe that the old breed are a perfect contrast to the improved short-horns, in form and handling. I believe they also consume more food.

If cows are wanted for the supply of milk alone, as in the neighbourhood of great towns, the deep milking old breed are of course the most profitable. If, on the other hand, a breed of cattle is wanted for the general purposes of farming, in countries where beef is in great demand, the improved short-horns are, beyond all doubt, the best. This, I hope you will consider, a fair and candid statement.

With respect to the price of my improved short-horns, as they are derived from the original improver, and consequently are genuine, and of the highest pedigree, I have never sold any bull, cow or heifer of the genuine breed for less than one hundred pounds sterling per head. For this price I would deliver bulls, or heifers at Liverpool, warranted of the best pedigree, and of the most approved form, handling and hair.

I shall always be happy to give you every information in my power, and if you should ever revisit England, I should be happy to show you, that the old English hospitality is not extinct. We inhabit countries whose people are derived from common ancestors, and I cherish the sincere hope, that the inhabitants of both, will henceforward cultivate a cordial in-

tercourse, and vie only in endeavouring to render good offices to each other.

I am, sir,

Most respectfully, yours,

BART. RUDD.

JOHN HARE POWEL, ESQ.
Powelton, United States.

On Imported Cattle—their injudicious Selection—Devons not good Milkers—Superiority of New England Oxen for Draught—their Excellence not to be ascribed to Devon Blood—Herefords better than Devons—Worthlessness of Alderney Cattle—Root Crops—profitable in America but for particular objects.

BY JOHN HARE POWEL, ESQ., in Answer to G. W. Featherstonhaugh, Esq.

Powelton, Philadelphia County, 1823.

Dear Sir,

I am glad, that you who combine skill in practice, with every advantage, in scientific research, confirm the opinions I had formed, on the most essential points of your communication. Of the various animals called "Short-Horns," to which you refer, very few are of pure "Improved Durham blood"—with some exceptions, there would not be much difficulty in showing, that they have *no claim* to the pedigrees or properties of the "*Improved race.*" Most of them have been selected near Liverpool, by cow-keepers, with regard rather, to the state of their udders, for the supply of milk on ship-board, than with reference to pedigree or their fitness to improve our farm stock. I have invariably found, that whether fed in the stall, tethered by a chain, soil'd in a wood, or left at large in the field, the pure "*Improved* Durham Short-Horns," consume less food, afford more flesh, lay on more fat, and yield more rich milk, than any race of cattle I have

known—neither have I seen, any *individual* of any other breed, uniting so many essential properties for the dairy, or shambles—nor has it been found, that my young stock, are more tender in the blasts of winter, or less hardy in the heats of summer, than the common cattle of the country. I have on the contrary thought, that their thick coats of silky hair, upon ample hides, rendered them after a generation or two, peculiarly fitted, to endure the sudden changes of our climate. HOLDERNESS, or "OLD SHORT-HORNS," were deep milkers, bad provers, great eaters, with heavy bone, thin skins, long legs and tender constitutions, and were marked by many of the defects, which betray some of the recent importations, as of a "poor breed." The size of the improved stock, *is* not "too great," for the ordinary purposes of our farms—and if it were, it would, by an immutable law of nature, which never ceases to affect, the animal, not less than the vegetable creation, in a few generations, be accommodated to the food, given for its support. Since the time of Colling, the various breeders of England, have made crosses with the same race, to meet their particular purposes. I have had within a year or two, twelve imported animals, and I can exhibit I think in the best blood of Mr. Wetherill, Mr. Curwen and Mr. Champion's folds, some essential points, marked by the peculiar views of the respective breeders. Early maturity is not the least important, of the valuable properties of this breed. I had a cow, which was four years old on the 21st of March, 1823; on the 8th of June following she had produced four calves at separate births. All her offspring are large. I think her quarters would weigh, notwithstanding her early bearing, 750 lbs.

Heifers should not receive the male before the end of the second year, except in particular circumstances, where it may be profitable, to sacrifice half-bred heifers, with the view of

multiplying animals, more nearly allied to the pure blood. The secretions of milk, are certainly "augmented by milking carefully, and systematically, stripping every drop from the udder," but I have not found, the duration of a cow's milk, in any wise affected by the period at which she had been dried, previous to the birth of her young. Few cows allow their calves to suck, longer than within two months, of the time of parturition. During the latter stages of gestation, the fœtus requires, those portions of nourishment, from which, the secretions of milk, must necessarily detract. The increase of food, might diminish the evil, but it could not remove the cause of objection, since the animal system is capable but of limited exertion, which cannot be extended at will. "The wear and tear of deep milkers," is avowedly great; but at no time are their effects so evident and strong, as when the calf within, and the milker without, in violation of nature, are at the same moment exhausting the animal's strength. I would turn off all fine cows, two months before the birth of their young.

I should not select "Short-Horns" expressly for draught alone. I am not satisfied, that the delicate Devons, which have been chosen for the *light soils of Norfolk*, are better suited to the yoke, than the vigorous, and spirited bullocks, which are found in Massachusetts, Connecticut, New York, Pennsylvania and Maine. It has been asserted, and by authority, which I am always disposed to respect, that the cattle of Massachusetts are derived from Devons. In proof it is alleged, that the inhabitants of that State had emigrated from Plymouth; and too, that the animals are, as in Devonshire, generally "*red.*" I would ask, whether the ages, which have passed, since the settlement of the colony, must not have produced, in a climate so different, under circumstances so oppo-

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site, and with management so distinct, a radical change in the form, disposition and properties of the ox, scarcely less marked, than in the propensities, habits and character of the man. I would contend, that the finest cattle in Massachusetts are mixed with families, of which Mr. Gore, Mr. Stewart, and Mr. Vaughan, imported the sires. Lancashire, Leicester and Hereford blood, can be traced by a practised eye, in many of the best working oxen, exhibited at the New England agricultural shows. If colour determine the question, of Devon superiority, it is but fair to state, that from 100 yokes of the finest draught cattle of Massachusetts, which last autumn had been exhibited at the Worcester Show, the best, were taken to Brighton, where a pair of *very light yellow* oxen, received the premium, for *docility and speed at the plough.* On a former occasion, a yoke of black and white bullocks, received the reward. The most hardy, and active cattle, I have ever seen, had the shape of Kyloes, and were brown. I should ascribe, the extraordinary performance of New England cattle, to the skill, sagacity, singular steadiness, and peculiar firmness of the men—to care in selection—and to the face of the country in which they are bred. A New England ox, as a New England horse, and New England man, is exposed to exertion from his birth—the hills upon which he must generally seek for his food, give health to his lungs, and vigour to his muscle, whilst the shortness and sweetness of the grass, properly nourish his frame, without loading it suddenly, or producing sluggishness under the yoke. I can conceive, no advantage, which is to be had, from the introduction of imported Devons, among our farm stock. Have any instances been brought, wherein it appears, that in activity, patience or strength, they have in Great Britain, surpassed the oxen of Massachusetts, or New York?

I have never seen in Europe, performance of oxen, comparable to that, which in Massachusetts would scarcely be remarked.

Mr. Coke, in speaking of his favourite race, acknowledged "that difference of opinion must necessarily exist, yet on the light lands of Norfolk, Devons were allowed to excel." Have the rare Devons, for which we are indebted to the munificent and distinguished improver of Norfolk husbandry, shown extraordinary excellence in the secretion of fat, production of milk, early maturity, or weight in the valuable parts? They, no doubt, during six years, have had all that food, care and skill could effect, to make evident the vast superiority of this active and fashionable race, over the gross, heavy beasts, which we Pennsylvánians prefer for their vulgar hind quarters, productive udders, propensity to sleep, and grow fat. For certain purposes, I am not sure, that a cross may not be advantageously made. With this view, you have judiciously taken a small male—as theory and practice have established the belief, that he should be of the smaller family, to ensure proper nourishment to the fœtus, and good shape after birth. I have not succeeded, in attempts to improve with the Devon blood. The sire and dams, with which the experiments were commenced, had been imported. The size, temper, mellow handling, and "quick feeding," of the Short-horns, have been lost, whilst in the consumption of food nothing has been gained.

At the late Maryland Cattle Show, eighteen or twenty "three-fourths bred" bulls, heifers and calves, immediately derived from the animals sent to America by Mr. Coke, were sold by auction, at prices not larger than the common cows and calves of New England readily command. As the stock had not only been known, but some individuals of it had been

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possessed by many of the spirited and wealthy farmers who were present, it is to be presumed, a fair estimate of the value of Devons, for the purposes of America, can thus be had from a public sale. There have been several importations of Hereford cattle. Mr. Edgar, of Rahway, New Jersey, imported three years since, a beautiful Hereford heifer, and her calf. Mr. Clay has, with his accustomed liberality, extended in Kentucky, his fine Hereford stock. I should, with your views, select for a new cross, an Hereford bull, small of his breed, which possesses size and good points for the shambles, more tendency towards proof, as much bottom for the yoke, and as many properties for the dairy, as the Devons from which they have sprung, unless I could obtain one of the best animals from the great herds of Mr. Wadsworth, of New York. I have not seen at any of the Eastern shows, oxen to be compared to them, or to those from the South Branch of the Potomac, except for the purposes of the yoke.

Of the unthrifty, dwarfish, and savage race, called Alderney, I have for fifteen years had ample experience. I do not pretend, that *Norman* cattle, from which they were derived, are not thrifty and good; but I venture to assert, without fear of contradiction, by facts, that of all the mistaken efforts, by which the unpractised, theoretical, agricultural teachers of this State have excited the surprise of humble, practical farmers, there have been few more unfortunate, than their recommendation of this wretched breed.

I am not disposed to question the usefulness of gentlemen farmers—those patriotic, enlightened, and liberal men, who by practice detect error, by science expound the theory, and by their generous exertions, and zeal, elevate the importance, and extend the influence of the most essential of all human arts—but I condemn, the flippant writers, and half bred phi-

losophers, who would teach without knowledge, as they farm without land.

The readiest and "cheapest means of keeping stock," must depend upon the climate, the circumstances of the farmer, the condition, and position of his land. Turnips, carrots, or mangel wurtzel are admirably adapted to some districts of our country, although, in most parts of America, their cultivation, is attended with so much uncertainty, and comparative expense, that they cannot be introduced, for the general purposes of the fold: nor should I conceive, that in any section of the United States, where Indian corn is a certain crop, they should be employed but for particular objects. I had tried, for five years, ruta baga, and for three, have succeeded with mangel wurtzel. I believe, I have had of both, quite as good crops as most farmers of this State. I found less difficulty in cultivating turnips, from my acquaintance with the European modes of management, and from my practice, of ploughing deeply, and obtaining by the use of scarifiers, fine tilth. Yet my turnip crops, generally disappointed my expectations, whilst my mangel wurtzel, which had been placed by their side, uniformly so perfectly succeeded, that I have confined myself to the cultivation of them alone.

I exhibited some of the cream, afforded by a cow fed upon mangel wurtzel, and millet fodder only, at a late meeting of the Pennsylvania Agricultural Society, when it was declared, by all the members who were present, to be equal in richness, colour and taste, to any cream they had seen. Its colour was very like that which is produced in June.

Some of my Short-horn heifers, which came fat from the meadows, were put with a native cow, which I had rescued from the butcher, on a bare field, in order that they might be sufficiently reduced, to calve safely. The native cow, be-

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came, although unusually fine of her kind, quite as thin as could be desired, the others have retained their flesh, and are now so fat, that I have been obliged to occasionally substitute, straw for millet hay, with the addition of a little more than a peck of mangel wurtzel, a day. I contend, that the fitness of any race of farm stock for the general uses of the country, must be determined, by the comparative consumption of food —for it would be in vain, to recommend to American farmers, expensive beasts, which by their graceful forms, or large frames or fashionable points, attract the notice of unpractised or wealthy men, unless we can show that *less food* is required for their stomachs, more butter is derived from their udders, more flesh from their loins, less offal with their bone, and a quicker return is made, by their early maturity, to the breeder's pocket.

It is a well-known fact, that in England, pure "Durham Short-horns" are fed during the first winter generally upon turnips and straw. Too much importance cannot be attached to the production of esculent roots, to a certain extent, for the promotion of health, and useful secretions of neat cattle and sheep. Half the diseases with which they are assailed proceed from indigestion or obstructions, occasioned by unwholesome dry food.

I am, dear sir, with great esteem,

Most faithfully, yours,

JOHN HARE POWEL.

G. W. FEATHERSTONHAUGH, ESQ.

On Improved Durham Short-Horns—their Docility, Hardiness and Properties as Milkers and quick Feeders.

By Henry A. Carpenter, Esq. of Lancaster County, Pa.

Carpenter Hall, Lancaster County, June 14th, 1823.

Dear Sir,

You desire the result of my experiments with the Short-horn stock I purchased from you last year, and my opinion of the neat cattle of Lancaster county. Males of various breeds of neat cattle have been brought to this county, but they have been so much crossed with the common stock, and so little attention has been paid to purity of blood, that at this time there are none that show any marks of a distinct breed.

The two half blood heifers by the Short-horn bull Denton,* which you stated had calved last July, produced through the course of last winter butter of a better quality, than any I ever saw made in the month of May, and it was always obtained in about ten minutes churning. One of these heifers produced a calf the beginning of June, the other (the three year old) has supplied nine labouring men all spring with a sufficiency of milk, and butter once a day; which production exceeded that of *a fresh milch cow* of the common stock, which *I had selected with great care, and proved to be as good a milker as the neighbourhood could produce.* I am sorry that I cannot give you an account of the production of butter from the imported cow Moss Rose, in a given time, as her calf had got so old before the trial was made that it would not take to other cows; but I do not hesitate to give it as my opinion, that twelve or fifteen pounds of butter of the finest quality can be made from her in one week, as she possesses the power of secreting rich milk, in a greater degree than any

* Of the improved race.—Ed.

animal I have ever seen. I expect that this is enough to satisfy you that as milkers the Durham Short-horns are not to be surpassed. The bulls are docile and good feeders.

These cattle are hardy; and their value can only be estimated by him, who considers the time it requires to alter the form and propensities of the animal, and the degree of perfection it may be brought to; I therefore think it a want of thorough knowledge of the animal, that makes any person object to the price of the Durham Short-horns. All my neighbours express their astonishment, at viewing my cattle, and highly approve of the selection.

I am, Sir, your most obedient,

H. A. CARPENTER.

JOHN HARE POWEL, ESQ.

Corresponding Secretary of the Pennsylvania Agricultural Society.

MR. JOHN TOMLINSON, of Philadelphia County—*in Reply to a Note accompanying some Cream, afforded by the Milk of a thorough-bred Improved Short-Horn Heifer.*

Philadelphia County, 6th Mo. 30th, 1823.

Respected Friend,

The cream I tasted was very rich; its colour and quality were quite as good as any I recollect to have seen. That which I had noticed at thy house was I think as good. I have 45 heifers and cows of various ages. I have 29 head of Joseph Sims's breed.* I sold my butter at 37½ cents per pound; the price which I asked when butter was selling at from 25 to 31 cents in the same market.

Respectfully,

JOHN TOMLINSON.

JOHN H. POWEL.

* Mr. Sims's breed are of pure Alderney and Holstein blood.

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Notices on Cattle, from Lawrence's, Parkinson's, and Culley's Treatises on Live Stock—Bailey's Survey of Durham—Strickland's Survey of the East Riding of Yorkshire—and the General Report on the State of Agriculture, &c. in Scotland.

EXTRACTS FROM LAWRENCE'S GENERAL TREATISE ON CATTLE.

The natural duration of life with the bull and cow may be stated at upwards of twenty years, to nearly the end of which the latter is useful with her milk, but the former usually loses his vigour, consequently his use, many years sooner.

The period of gestation with the cow, having a bull calf, is, according to the average of my own accounts, two hundred and eighty-seven days, or forty one weeks, with the variation of a few days, either way; a cow calf comes in about a week less time.

The age of neat cattle is determined by the teeth and horns. They, as well as sheep, are destitute of teeth in the upper jaw; but the mark of age, as in the horse, is to be found in the corner incisory teeth of their lower jaw. The first front teeth, or calves teeth, remarkable for their whiteness are shed at two years old, and replaced by others not so white. Every succeeding year two other calves teeth, next to the front, are also replaced, and at five years old, the incisory or cutting teeth, being all renewed, are of good length, whitish and even, and the beast is full-mouthed. From this period, as the horse, the teeth are gradually filling up, until six years, when the mark is complete. The teeth afterwards become discoloured by age, and sometimes long and irregular. I know not what kind of calves, or of authority, certain of our writers intend, when they talk of calves shedding teeth at ten months old.

The HORNS of cattle are general designations of distinc-

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tion and variety, and are supposed to denote particular qualities. Thus, English bullocks are distinguished as Long, Half-long, Short, and Middle-horned, Wide and Broad-horned, Polled or Hornless.

The grand distinctions, however, are the Long and Short-horned, which seem generally implicated with peculiar properties of milk and hide. Thus the Long-horned cows produce a richer milk, in course, a greater proportional quantity of butter and cheese, and a thicker hide, than the Short-horned,* which last, however, afford larger quantities both of milk, beef, and tallow.

The colour of cattle seems perfectly immaterial, in the view of utility. The old prognostics drawn from colour were truly nonsensical. I have frequently seen black cows the largest milkers, and have at this time before my eyes an ancient one of Holderness, milking herself gradually to the dogs at the rate of nine gallons in a day.

On the form of cattle, I must beg permission to make the following extract from the New Farmer's Calendar.

"General symmetry and harmony of parts; that is to say, an equal and proportional union of length, depth, and substance; the head not large, or long, but neatly shaped; eyes full and clear; neck not long, but inclining to thinness, decreasing, or tapering towards the head; chest wide and full; legs by no means long; fore ones straight, the shanks clean and fine; feet even and sound, the toes turned neither in nor out; girth deep; back and loins straight and broad; belly capacious, without swagging; quarters deep and capacious, the flesh reaching down to the hocks, from which, the legs forming an angle, the feet will stand sufficiently under the loins; distance as great, at least, between the hinder as fore feet.

* Not the improved race.—Ed.

"A very few comments on the above text will suffice even those, who have but slightly considered the subject. Inequality of parts betokens weakness and imperfection, whereas just and equal proportion, is the truest indication of strength, and of ability in the animal, to produce, and stand under the greatest possible load of flesh. Should there be a deficiency of length and depth, we shall not only experience a deficiency of general weight, but of lean, by far the most valuable part of the animal's flesh. Short and round animals, although quick feeders, and of hardy constitution, fail in weight, and are apt to produce entire masses of fat: and the whole body being as it were, crowded into the form of a tun, we in vain seek that depth and substance in some of the noblest parts, which are to be found only in a well-proportioned carcass. On the other hand, the carcass being too long, denotes delicacy, inaptitude to fatten, a demand of much food, and great length of time. The loins being narrow and thin, and the feet standing too close, are both signs of weakness, and very unsightly defects. When the fore legs approach too near, it may be presumed, from the consequent narrowness of the chest, there will not be sufficient room for the action of the lungs, during the period of fattening; and that the risk may be incurred of that common accident, their adhesion to the ribs.

"Sickle, or crooked hams, or the standing out too far of the hinder legs, that they appear to drag after the body, are very unfavourable indications, and of a most disgusting appearance in any animal. Thus, whatever be the height, or size of the beast, the three grand requisites of form, are the proportional union of length, depth, and substance, which assures the inherent and desirable qualities of each. The peculiar points of each species of stock, will ever be found in a perfection, commensurate with the general good shape of the animal.

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"In the above detail we have been confined to the characteristics of strength and utility solely, leaving untouched the lines of beauty, which may be considered to consist chiefly in the oval form, or in the neat rounding of the parts. Thus in horses and neat cattle, particularly, instead of that excessive squareness and flatness of the shoulder, the side and the buttock, depth ought to be relieved by a gentle fulness and swell, which are the tokens both of beauty and substance; nor should there be any sharp, bony protuberances, either upon the shoulders, or hips, to offend the eye, by detracting from the plump and even proportion of the form.

"Our object with cattle being simply that of fattening their carcasses, it may be observed, that any strong and healthy animal, however awkwardly proportioned, will answer the purpose; which is, indeed, true; but it is no less true, and has been confirmed by all experience, that attention to form is rewarded by quantity of product. The general indications of health, in the hairy animals, when in a lean or store state, are suppleness of the skin, and gloss upon the coat: in sheep, perhaps, brightness of the eyes, liveliness, and good plight, are the only signs to be depended upon."

The much disputed question of the size of cattle, involves such a multiplicity of considerations, that the attempt to determine it would require a discussion of considerable length, grounded on an ample series of experimental facts. It may be, however, safely affirmed, that in general where food is in plenty, a large market accessible, and a demand expected, full-sized stock will render the largest profit.

It is by no means an infallible rule, that the appetite and demand of food is in proportion to size and weight; the contrary frequently happens, and the superiority of growth, in the large breeds, seems an advantage too considerable to be

compensated by the more speedy fattening of the small: nor is it always to be depended upon, that small cattle will make a higher price per pound than large in the London markets.

All animals will fatten early, and quick, in proportion to the smallness of their bones, with the disadvantage, however, of running too much to fat, and falling short in the quantity of solid flesh, in course, of weight; hence the private advantage is not so great as generally supposed, and the public disadvantage sufficiently apparent.

Large round bones, vulgarly styled "gummy," indicate a coarse and open-grained flesh; but the produce is generally plentiful. Such are the Lincolnshire cattle. Bone may, however, be fine, that is to say, flat and symmetrical, yet sufficiently large, and thus it is in our best bred stock.

The original or established Species, or Breeds of Cattle, in Britain, with their permanent Varieties, as they are found in the beginning of the Nineteenth Century.

The DEVONS. From these have been derived the HEREFORDS, old GLOUCESTER REDS, and SUSSEX.

The KENTISH HOMEBREDS.

The WELSH MOUNTAIN and LOWLAND CATTLE.

ISLE OF ANGLESEY.

The LANCASHIRE, or NORTH WESTERN, and MIDLAND COUNTY LONG-HORNS.

The SHROPSHIRE WIDE-HORNS.

The NORTHERN SHORT-HORNS, or TEESWATER, LINCOLN and HOLDERNESS, or YORKSHIRE SHORT-HORNS.

The NORTHERN HALF LONG-HORNS. The POLLED.

The NORFOLK HOMEBREDS. SUFFOLK DUNS.

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The SCOTTISH ISLAND, MOUNTAIN, and LOWLAND CATTLE.

The WILD CATTLE OF ENGLAND.

The ALDERNEY and IRISH CATTLE.

In my own opinion, the purest Devons frequently run to too great length of leg, crooked behind, or sickle-hammed, and of insufficient general substance. They are also, I think, inclined to be in-kneed, that is, crooked in the fore legs; a defect analogous to that styled sickle-hammed in the hinder legs, or, as we say of the human animal, knock-kneed, than any other reputed race. These cattle have generally, for a century past, commanded the best price at Smithfield; but of late years, the buyers there have shrewdly remarked, that although blood and fine form are very pleasing to the eye of the gentleman breeder, yet substance and weight are, and ever must be, the grand objects at market.

The DEVONS are the speediest working oxen in England, and will trot well in harness; in point of strength, they stand in the fourth or fifth class. They have a greater resemblance to deer than any other breed of neat cattle. As milkers, they are so far inferior to both the long and short horns, namely, both in quantity and quality of milk, that they are certainly no objects for the regular dairy, however pleasing and convenient they may be in the private family way.

The HEREFORDSHIRE cattle, obviously at this day a mixed breed, are, in general, supposed to have been originally of the Devonshire species. They are very conveniently various as to size, but all require good keep. They are our most powerful draught oxen, yet speedy enough for any work, either at plough or cart, and will generally walk full as quick as their attendants find agreeable: as their meek and

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placid countenances indicate, they are docile and tractable, and, if trained with temper and kindness, will drive to an inch with reins. They are equally excellent upon the road, or at plough. As milkers they have nothing particular to boast.

The old GLOUCESTERSHIRE REDS and BROWNS, if I recollect aright, were middle-horned, showing blood, and resembling in a considerable degree, the South Devons, but of a more square and substantial form. They were a mixed breed, showing much Welsh blood, and were, it may be presumed, more apt to fatten than milk, since they have given way to the Long-horned species in that dairy country.

The SUSSEX cattle are in very high estimation for beef and labour, and, in some degree, for milk; to which latter respect they are superior to their kindred, the Devons and Herefords. They are very flat and deep, generally red or brown in colour, and show much blood; both wide and middle-horned, the points turned upwards and backwards, of various size, but the largest generally far too coarse in the bone, and of insufficient width or substance for their great depth of carcass. Their speed appears to me remarkably great, and I doubt whether even the Devons are, in that respect, superior; they are in the mean time, equal in powers to the cultivation of the heaviest clays, and to draught over the deepest roads; in temper somewhat quick, like the Devons.

The SHROPSHIRE WIDE-HORNS. Large, square, deep, and bony, with thick hides; in colour brinded, red and brown; the horns branching, points turned upward and backward.

The LANCASHIRE, or NORTH WESTERN, and MIDLAND COUNTY LONG-HORNS. This is an original species, probably of as high antiquity as any of this country, and is still to be found in considerable, if not entire, purity of form; because,

although it has been used as a cross for almost all other breeds, the great improvers of Long-horned cattle have generally, for various reasons, adhered to their own species. Their characteristics are rotundity of carcass and bone, with considerable length of the former, and coarseness of the latter; thickness of hide, and rich quality of milk, the quantity generally inferior to that of the Short and Middle-horns. The horns of this species are either regularly and horizontally extended to the points, or fall adown the cheeks, until their points meet, when the animal is sometimes styled wheel-horned. Occasionally, the long horns assume a fanciful direction upwards, bending irregularly at the extremities; sometimes one horn takes its course up, the other downwards. The species, with a few exceptions, is generally too slow and sluggish for labour.

Bakewell after breeding in and in,* with this stock, through a great number of descents, ever selecting individuals of the roundest form, and smallest bone, he attained the desired success in these respects, and raised that variety which has been since so celebrated for aptitude to acquire external fat. But in the attainment of this end he sacrificed the quality of great milking, and rendered the animals less certain in the faculty of procreation. Hence the Dishley or New Leicester variety of Long-horns are calculated solely for the purpose of the grazier, the old breed retaining its superiority in the dairy.

The extreme coarseness and size of the Northern Short-horns led to the introduction of Norman bulls, at some period of the eighteenth century, with the precise date of which we

* Bakewell's practice has never been fully divulged. During his life, it was carefully concealed; and it is now generally believed, that he did not breed in and in.—J. H. P.

are unacquainted. This improvement commenced in Holderness, Yorkshire. Never was there a more fortunate cross. In no other country does exist so excellent a breed of cattle, as those of Holderness, including all the useful properties. In one, perhaps the most important respect, great milking, they are superior, and even without rivals. Their beef is finer than that of the old Short-horned breed, and they fatten much earlier and quicker, carrying still a vast depth of natural flesh, and tallowing within, in the first degree. They have both speed and strength enough for labour, and their shoulders are well formed and well posited for draught. Being beautifully variegated in colour, spotted, striped, sometimes sheeted red and white, or black and white, they make fine park stock, a noble example of which may be seen at the seat of the Earl of Coventry, in Worcestershire. From their superior quantity of milk, they rival the best Long-horns in the cheese and butter dairies, and for suckling, are unrivalled.

Suffolk Duns. This variety, most probably, originated in the Polled Galloway breed of Scotland, with which Suffolk and Norfolk have been supplied, during more than a century past. They are of lighter colours, smaller, and finer in bone than the Scots Galloways. Long, with a large carcass, clean throat, snake-headed, that is, the neck tapering to the head, thin tail, and rather short legs. These are very excellent dairy stock, giving the largest quantity of milk, in proportion to their size, of any breed whatever, but not rich in proportion with the Long-horns or Alderneys. A first rate Suffolk cow will give six gallons of milk per day, when in full milking, and at the best season. This breed also feeds well, and the beef is fine: it is one of those breeds of such inherent excellence, as not to be improvable by any known

cross. The Suffolk cow is one of the most advantageous for a private family.

The ALDERNEY and NORMAN CATTLE. The cattle of the islands on the French coast are, I believe, collectively known by the name of Alderney. These are a variety of, and smaller than, the Norman; light red, yellow, dun and fawn-coloured; short, wild-horned, deer-necked, with a general resemblance to that animal; thin, hard and small boned; irregularly, often very awkwardly, shaped.

BAILEY'S SURVEY OF DURHAM.

The cattle bred in this county have for a great number of years been of the Short-horned kind, the best variety of which have been long found on both sides of the river Tees.

An attempt to improve them (which I suspect was more with regard to size than any other quality) was made by Mr. Michael Dobinson, who brought a bull out of Holland, that is said to have improved the breed. A few years after, some other adventurers went over to Holland, and as *great bulk* was then considered as the criterion of perfection, they brought home a complete lyery animal, with immense buttocks, which did a great deal of mischief; but there were some intelligent breeders that steered clear of this evil; and from them the pure Teeswater breed has descended to the present time, in which were united the property of feeding to *great weights*, and *being great milkers*.

Messrs. Collings have frequently sold cows and heifers for £100, and bull calves at £100. Mr. Charles Colling has refused £500 for a cow; and in 1807, Mr. Mason refused 700 guineas for a cow.

These gentlemen let bulls out by the year—the prices from 50 to 100 guineas; and the public are so fully convinced of their merits, that these celebrated breeders cannot supply the demand from the PURE BLOOD, which they are as cautious of preserving, as the amateurs of the turf are the breeds of their race horses, and which the takers of bulls are become so well acquainted with, that the prices they give, are in proportion to the good qualities of the individuals, and merits of their progenitors—more regard being paid to their pedigree than to any thing else; for this purpose they have books containing the full pedigree of their stock, similar to the stud book of race horses, by which any person wanting to purchase any of their stock, or to hire bulls, may see how they are descended.

The Durham ox was bred by Mr. Charles Colling of Ketton, in the year 1796: his form and nice handling, indicated every disposition to fatten at an early age, and the expectations entertained of him by the best judges, were not disappointed: at five years old he was not only covered thick with fat upon all the principal points, but his whole carcass in a manner loaded with it, and was then thought so wonderful an animal, and so far exceeding whatever had been seen before, that he was purchased to be exhibited as a show, by Mr. Bulmer, of Harmby, near Bedale, in February, 1801, for £140: at this time he was thought to weigh 168 stones, his live weight being 216 stones (14 lbs. to the stone): this did not arise from his superior size, as will be seen on comparison in the following table.

THE DIMENSIONS OF HEAVY OXEN.

NAMES OF OXEN.	Age.	Length from horns to rump.	HEIGHT AT				GIRTHS AT			BREADTHS AT		WEIGHTS OF		
			Crops.	Loins.	Breast from ground.		Crops.	Belly.	Loins.	Hips.	Shoulder.	Carcass.	Tallow.	Hide.
		Ft. In's.	Ft. In's.	Ft. In's.	Ft. In's.		Ft. In's.	Ft. In's.	Ft. In's.	Ft. In's.	Ft. In's.	St's. lbs.	St's. lbs.	St's. lbs.
Blackwell . . .	6	9 5½	6 0	5 8	2 1		10 6		9 7	2 10	2 10½	151 10	11 0	9 0
Howick Red . . .	7	9 4	6 0	5 10	1 11½		10 0	10 8	10 1	2 10	2 9	152 9	16 7	9 2
Do. Mottled .	7	9 8	5 10	5 9½	1 7		9 8	10 10	9 10	2 11	2 7	152 8	16 0	9 11
Barningham . . .	5											150 4	16 0	9 2
Mr. Charge's . .	7	8 2	6 2		1 8		10 7	10 8	10 10	2 9	3 0½	168 10	13 0	
Mr. Colling's . . .	5	8 4	5 3	5 5	1 6		10 0	10 2	10 2	2 7	2 7	168 0		
Ditto . . .	10											220 0		

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Mr. Bulmer got a proper carriage made to convey him in, and after travelling with him five weeks, sold him and the carriage at Rotheram, to Mr. John Day,

	£.	s.	d.
On the 4th of May, 1801, for	250	0	0
On the 14th May, Mr. Day could have sold him for	525	0	0
On the 13th June, for	1000	0	0
On the 8th July, for	2000	0	0

A cow of Mr. Mason's of Chilton, in point of fat, was not less remarkable than the ox. When I saw her in 1808, the depth of fat from her rumps to her hips, in a perpendicular position, was not less than 12 inches; upon her loins and crop, not less than 10 inches; and the shoulder score at least 9 inches thick.

Their keeping is as follows: the cows seldom calve sooner than April; the calves get new milk for the first three weeks; after that a moderate quantity of scalded skimmed milk, mixed with oil cake boiled in water, about two quarts of each, along with good hay, for about six weeks; after which they do very well in the pastures without any kind of hand feeding, until the latter end of November, when they are tied up, and fed with straw and turnips until the beginning of April, from which time they get hay till the pastures are ready. The mode of proceeding is exactly the same through the next year, to the time of selling: they never get oil cake or corn.

The gentlemen who are in possession of the improved breed of cattle, from their long practice, and great attention to this subject, may be supposed to have tried various modes, and to have adopted such as they found most useful: their favourite cattle they do not tie up, but have their feeding places

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prepared with a covered shed, about 33 feet by 15, surrounded by an open yard of the same dimensions, in which is placed at the corner, a trough for turnips. The advantages of this mode are, that the cattle being at liberty to walk about, and being inured to the open air, when turned to early grass, do not suffer from exposure to cold, nor from being cramped in the feet, to which those that are tied up are liable. Mr. Mason put, on the 8th December, three oxen two and a half years old, estimated to weigh 50 stones (700 lbs.) to white turnips, with which they were fed at the rate of 17 stone, 4 lbs. per day, on an average, to the beginning of February; from this time they had 18 stones of ruta baga per day on an average, to the beginning of May, when they were sold, and admitted by the butcher to weigh at least 70 stones a piece, having gained 20 stones in 20 weeks.

GENERAL REPORT OF SCOTLAND.

The reporter in commenting on the Fife breed of cattle, observes:

"Of all the *native* breeds, this is perhaps the best adapted for arable land; as, like the Short-horned breed of England, they are valuable for the three desirable qualities of milk, beef, and labour."

And when noticing the "dairy cattle" of the western counties he adds, "both bulls and cows of the Teeswater or Short-horned breed are said to have been introduced into Ayrshire, and it is from them and their crosses with the native stock, that the present *dairy* breed has been formed. The Alderney, and other varieties have been introduced into several parts of Scotland, but in such small numbers, that it is unnecessary to describe them, none of them having become objects of attention *to farmers*."

PARKINSON ON LIVE STOCK.

Alderney Cattle.

These seem to be a very tender species. Their colour is mostly yellow, with white or mottled faces, and white interspersed on various parts; they have short crumpled horns: their size is small, and they are of as bad a form as can possibly be described. The bellies of many of them are four-fifths of their weight; the neck very thin and hollow; the shoulder stands up and is the highest part; hollow and narrow behind the shoulders; the chine is nearly without flesh; the hucks are narrow and sharp at the ends; the rump is short; the thighs are thin; the bones small, and they are narrow and light in the brisket; but the udder is well formed, and so are the paps; and the milk is said to be rich, and it ought, as they give but a small quantity in proportion to the food consumed. Of this last property I have made no trial, but a neighbour of mine for two or three years past kept one of these cows on a given space of land; last winter and this summer he has had a very large Yorkshire cow on the same pasture, which is in much better condition than the Alderney used to be, and he informs me he knows no difference in the food, as his paddock in the summer is equally divided, one half for summer grass, the other half for hay for the use of the cow in winter. The small Alderney cow consumed the whole of the produce, while the large cow did no more. When I asked this gentleman if the milk from the large cow was as rich as that from the small, he replied, oh! yes. This seems a fair experiment in regard to the goodness of milk. The family has found no other difference than in doubling the quantity. She is a large, well formed, and complete Yorkshire cow, and if made fat, would be as heavy as three of the Alderney breed.

CULLEY ON LIVE STOCK.

The Alderney breed is only to be met with about the seats of our nobility and gentry, upon account of their giving exceeding rich milk, to support the luxury of the tea-table, &c. Indeed, if it was not for the sake of method, and my believing them a distinct breed, I might have saved the trouble of naming them at all; as I imagined this breed too delicate and tender ever to be much attended to by our British farmers.

EAST RIDING OF YORKSHIRE.

The Short-horned cattle, which are remarkable for their large size and abundant supply of milk, prevail universally throughout the East Riding. This breed appears to be similar to that of the United Provinces and the north-western parts of Germany, and has probably been introduced thence at some distant period into Holderness, whence it has extended itself to distant parts of the kingdom.

About seventy or eighty years ago, one of the St. Quintin family introduced a bull and some cows from Holstein, which were similar in appearance to those already in Holderness, but possessed some qualities superior to them: of these the descendants could be traced for many years afterward in the neighbourhood of Lowthorpe, where they were kept.

The cows of the *unimproved*, or *original Holderness* breed, are of a very large size and strong bone, have wide hips, a thick hide, and flat sides, with but little disposition to become fat, but give a great quantity of milk, the generality affording from two to three gallons twice a day. Many indeed may be found, which give eight gallons per day, and there are instances of a still greater quantity.

The late Sir George Strickland, Bart. was the first improver of the breed of Short-horned cattle in the East Riding, having been arduously engaged in this pursuit for the last forty years of his life; and the prices which the breeding stock upon his farm sold for subsequently to his death, in 1808, (*the highest which had ever been given for cattle of this breed at that period,*) evinced that his endeavours had been attended with success.

Of later years several others have adopted the same pursuit, and it is now become very fashionable, and likely to effect a great and permanent improvement in the cattle of the Riding. One very excellent stock of Short-horns was introduced into the Riding a few years since from the vicinity of the Tees, by Mr. George Coates, of Driffield, who exhibited to the public a very beautiful heifer as a specimen of it, and who has since sold a bull of the same breed for 500 guineas.

Many bulls have latterly been purchased and hired into the East Riding at high prices from the neighbourhood of Darlington, in the County of Durham, where *a much superior breed* of Short-horns are found, *possessing all the perfections and qualities* which are wanting in the Holderness breed. They are smaller in size, lighter in the bone and hide, and have a much greater propensity to become fat.

Some of the most knowing judges of cattle affect to pay no attention to the size, colour, form, &c. of the horns of animals, as being non-essentials, and therefore not to be regarded; but in the opinion of many intelligent men, they afford a strong distinguishing mark, not only of varieties, but, in many cases, of the particular good or bad qualities of individuals in each variety possessing them. The Lancashire Long-horn, the Yorkshire Short-horn, and the Galloway or Polled breed, are

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instances (with many intermediate ones) of the advantage of attending to the horn, or the absence of it, in distinguishing varieties; with regard to the properties of individuals, the very short horn turning directly inward, here called the "Buckle or Pincher-horn," is the certain mark of a kindly animal; while a very thick horn, or one which is of a dark olive green colour, are proofs of a coarse fleshed and bad thriver. At the same time, implicit reliance must not be placed upon the judgment of the eye, without correcting it by the hand, which, with persons accustomed to the handling of cattle will always be the final appeal, and without which no just idea of the merits of any animal can be formed.

It is to the skill, intelligence, and perseverance of the Messrs. Collings (the Bakewells of the north), that the country is indebted for the very excellent breed of Short-horned cattle, which, by careful selection and superior judgment, they have produced and widely disseminated, and for creating a spirit of improvement which is rapidly extending itself in every direction.

As a proof of the estimation in which this breed of Short-horned cattle is held, not only by skilful judges from distant parts of the empire, *but in its own immediate neighbourhood*, it is merely requisite to adduce the catalogue of Mr. Charles Colling's sale, which took place at Ketton, on the 11th of October, 1810, in consequence of his having declined business.

COWS.

Guineas.

1. *Cherry*, out of Old Cherry, by Favourite, 11 years old. Mr. Nesham, near Durham, ... 83
2. *Kate*, by Comet, 4 years old. Mr. Hunt, near Darlington, ... 35

Guineas.

3. *Peeress*, out of Cherry, by Favourite, 5 years old. Major Rudd, near Stockton, ... 170
4. *Countess*, out of Lady, by Cupid, 9 years old. Major Rudd, ... 400
5. *Celina*, out of Countess, by Favourite, 5 years old. Sir H. Ibbetson, Bart. near Otley, ... 200
6. *Johanna*, out of Johanna, by Favourite, 4 years old. Mr. Witham, near Piersbridge, ... 130
7. *Lady*, out of Phœnix, by a grandson of Bolingbroke, 14 years old. Mr. Wright, near Darlington, ... 206
8. *Laura*, out of Lady, by Favourite, 4 years old. Mr. Grant, near South, ... 210
9. *Cathleen*, out of the daughter of the dam of Phœnix, by Washington, 8 years old. Mr. Parker, near Malton, ... 150
10. *Lily*, out of Daisy, by Comet, 3 years old. Major Rudd, ... 410
11. *Daisy*, out of Old Daisy, by a grandson of Favourite, 6 years old. Mr. Bower, near Malton, . 140
12. *Cora*, out of Countess, by Favourite, 4 years old. Mr. Johnston, near Scarborough, ... 70
13. *Beauty*, out of Miss Washington, by Marsk, 4 years old. Mr. Wright, ... 120
14. *Red Rose*, out of Eliza, by Comet, 4 years old. Mr. Fenton, near Doncaster, ... 45
15. *Flora*, by Comet, 3 years old. Lord Lonsdale, 70
16. *Miss Peggy*, by a son of Favourite, 3 years old. Mr. Hill, near Nottingham, ... 60
17. *Magdalen*, by Comet, 3 years old. Mr. Champion, near Bawtry, ... 170

BULLS.

Guineas.

18. *Comet*, out of Phœnix, by Favourite, 6 years old. Messrs. Wetherill, Trotter, Wright, and Charge, near Darlington, ... 1000
19. *Yarborough*, by Cupid, 9 years old. Mr. Nesham, 55
20. *Cupid*, out of Venus, by a son of Favourite. Not sold.
21. *Major*, out of Lady, 3 years old. Mr. Grant, . 200
22. *Mayduke*, out of Cherry, 3 years old. Mr. Smithson, near Otley 145
23. *Petrarch*, out of Venus, 2 years old. Major Rudd, 365
24. *Northumberland*, by Comet, 2 years old. Mr. Buston, near Stockton, ... 60
25. *Alfred*, out of Venus, by Comet, 1 year old. Mr. Robinson, near Stockton, ... 110
26. *Duke*, out of Dutchess, by Comet, 1 year old. Mr. Smith, near Wooler, ... 105
27. *Alexander*, out of Cora, by Comet, 1 year old. Mr. T. Sykes, near Malton, ... 60
28. *Ossian*, out of Magdalen, by Windsor. Lord Lonsdale 76
29. *Harold*, out of Red Rose, by Windsor. Mr. Lorraine, near Newcastle 50

BULL CALVES.

30. *Ketton*, out of Cherry, by Comet. Mr. Bower, 50
31. *Young Favourite*, out of Countess, by Comet. Mr. Skipwith, Lincolnshire, ... 140
32. *George*, out of Lady, by Comet. Mr. Walker, near Bawtry, ... 120
33. *Sir Dimple*, out of Daisy, by Comet. Mr. Barker, near Richmond, ... 96

Guineas.

34. *Narcissus*, out of Flora, by Comet. Mr. Wright, 15
35. *Albion*, out of Beauty, by Comet. Mr. Booth, near Catterick, ... 60
36. *Cecil*, out of Peeress, by Comet. Mr. H. Strickland, near Bridlington, ... 170

HEIFERS.

37. *Phœbe*, by Comet, 3 years old. Sir Henry Vane, Bart. 105
38. *Young Duchess*, by Comet, 2 years old. Mr. Bates, near Hexham, ... 183
39. *Young Laura*, out of Laura, by Comet, 2 years old. Lord Lonsdale, ... 101
40. *Young Countess*, out of Countess, by Comet. Sir Henry Ibbetson, Bart. 206
41. *Lucy*, by Comet, 2 years old. Mr. Wright, . 132
42. *Charlotte*, out of Cathleen, by Comet. Mr. Robert Colling, near Darlington, ... 136
43. *Johanna*, out of Johanna, by Comet. Mr. Johnstone, ... 35

HEIFER CALVES.

44. *Lucilla*, out of Laura, by Comet. Mr. Grant, . 106
45. *Calista*, out of Cora, by Comet. Sir H. Vane, Bart. 50
46. *White Rose*, out of Lily, by Yarborough. Rev. Thomas Harrison, near Malton, . . . 75
47. *Ruby*, out of Red Rose, by Yarborough. Mr. Bower, ... 50
48. *Cowslip*, by Comet. Lord Lonsdale, . . . 25

The total amount of the 47 lots (one being unsold) is £6073 4*s*. or nearly £130 each.

1813

On the Evils of Soiling in a Country where Land is cheap, and Labour is dear.

By John Hare Powel, Esq.

Powelton, Philadelphia County, 1823.

Dear Sir,

I have tried soiling for many years. My experiments have been made with great accuracy, in the most favourable circumstances, and with all the zeal, and all the prejudices which my European recollections could beget. Twenty cows, during one season, were secured in stalls, properly arranged in a cool and shaded place—in the next summer, green food was dropped thrice a day, at convenient distances, beneath trees in a wood—in another, the animals were tied in a stone barn, with every advantage of regular and close attention. I am confirmed in the belief, that in *this climate*, soiling can seldom be profitable. I doubt whether one of the arguments adduced in its favour, ought not to operate essentially against it. It is asserted, and by no less authority than Sir H. Davy, (to whom, in all deductions from scientific inquiry, I would most implicitly yield, yet in the selection of nutritious grass, from noxious weeds, I should much more readily follow the instinct of an ox,) "that cattle are obliged, when soiled, to feed without making selection, and in consequence the whole food is consumed." The brute creation is directed by instinct to avoid at particular times certain plants, and at all times to shun others. So powerfully does it influence the dog, that he seizes with avidity the grass which immediately convulses his stomach, but causes him to void the offensive matter, with which it was charged.

I have seen my cattle consume among cut grass, weeds

which in the field they could not be brought to touch—they afforded as much milk, but did not at the end of the season show the healthful skins, wet muzzles, and clear eyes, which I had been accustomed to notice. Independent of the absence of thrift, which my stock evinced from the want of exercise, I was deterred from the prosecution of the plan, by the difficulty of obtaining, after the clover had gone off, regular supplies of proper food. I had tried Indian corn, sown broadcast, and in drills, and was convinced, that the exhaustion of the land by exposing it to repeated stirrings under our scorching sun—the wear and tear of the oxen, in breaking up the soil in our season of greatest heat and drought, the uncertainty of the product in due succession, as well as the certainty of expense and incessant vigilance, in feeding, cleaning, and watering the stock, determined me to adopt a new mode of economy, notwithstanding the introduction of millet had lessened the difficulty of obtaining green food. The well regulated, and beautiful farm of a distinguished gentleman of Quincy, whose attempts can seldom on any subject fail, has certainly given ample proof, that in Massachusetts, soiling may with a particular view be successfully practised. Even there, with every advantage of climate, or soil, young animals subjected to this practice, could not I am satisfied thrive. The bloated, sleek, and pampered calves, which we have seen taken from soft beds, and dark stables, to be dressed in ribands or exhibited at shows, are well fitted to deceive dillettanti farmers, or to decorate a butcher's stall. But they are not fitted for the purposes, nor enabled to endure the exposure of common American farms.

Exercise is not less necessary to protrude, and enlarge the muscle upon the carcass, than to give vigour, and health, to the constitution, and strength to the frame. Animals

whose families for several generations, shall have been closely confined in this climate, would cease to exhibit, the most valuable properties of their race. Cow-keepers, and small farmers, who cultivate patches near to great towns, may possibly, if they have the vigilance of New England, succeed; but I apprehend that south of the Hudson, whilst the richest meadow pastures can be had at $8 per acre a year, and labour can be procured but at the high prices,* which for many years it is likely to command, no man can profit on a large scale by the system, which in England, has been made successful, by the *cheapness* of labour, and *high price* of land. I think I attain the objects proposed, in some measure, by causing my cattle to be constantly attended, by a boy, whose whistle and voice control them, almost as effectually after a few days experience, as if they were yoked in a team. He confines them, to any part of the farm, in despite of the temptation of beets, and crops of corn. When they are satisfied with food, they are driven in the heat of the day, to a shaded place, where they drink, and deposit a large portion of manure. The expense of the boy, whose services in milking, cutting up weeds, and breaking the lumps of manure should be regarded, do not exceed thirty cents a day. If he were aided by a well broken dog, such as is seen, in many parts of Europe, his labour would be infinitely less.

I have not perceived, the great injury to my pasturage, from the treading of cattle, on which much has been said. I have considered that good husbandry requires, such distribution of stock, as prevents so great luxuriance of grass, as would expose it to injury, from the feet of the beasts. I have thus avoided, all the expense of inside fences, the loss of head lands, the productive nurseries of weeds, and I think, I have

* I paid the labourers who reaped my rye one dollar per day. I have sold the rye at forty cents per bushel.

gained, one-third of the dung, and can have lost none of the urine, by its *direct* application to the soil; without the cost of wells for its retention, of pumps, carts and philosophical contrivances, for its distribution; to say nothing of the waste, by evaporation, and soaking where no "growing leaves could arrest, and imbibe the fertilizing gas, on its way to enrich the crops on my neighbour's farm." In this impression I cannot be opposed by those, who would turn up the soil, between growing crops, *to produce evaporation* and accelerate decomposition in the season of our greatest heat and drought: for it must be admitted, that the grass to which the liquid is directly applied, will be benefited as much, as crops of turnips or corn, whilst the land imbibing a large portion of the matter, is protected to a great extent, by a covering of sward, and after *gradually* yields to the crop upon the surface due nourishment without the aid of the plough. Most of my cattle in the last year, were put upon distant meadows. I was led to try an experiment with the few which remained upon my farm, by tethering them with chains of thirty feet, attached to swivels and bolts of iron, driven into the ground. During the hottest part of the day, they were placed in a wood, and at proper times were removed to fresh grass. As they were all accustomed to being tied, and most of them to being led, less difficulty was found than might be supposed.

In the management of young bulls, by accustoming them to a long tethering chain, much may be gained—they are kept in subjection, guarded from accidents, and restrained from approaching the females at improper times.

I have the honour to be,

Very respectfully, yours, &c.

JOHN HARE POWEL.

JONATHAN ROBERTS, Esq.

President of the Pennsylvania Agricultural Society.

1817

WILLIAM J. MILLER, ESQ.—*on Merino Sheep—their Management—Increase—and great Importance, in the best Modes of Husbandry, as proved by the Product of his Farm.*

Philadelphia County, March 7th, 1824.

Dear Sir,

I have to thank you for your favour enclosing a letter from Mr. Rose, on the subject of Merino Sheep, from which I am happy to observe, that we agree exactly, in sentiment, as to the value of that stock, as well as the price, at which we could afford to produce that wool, say fifty cents per pound, unwashed.

With respect to the increase, and probable supply, a more perfect idea may be formed, from the result of my experience, and the facts, I shall give you, than any speculation on the subject.

I should have much more pleasure in complying with your request, could I flatter myself with the hope, that any thing I could say on the subject would have a tendency to remove in any degree, that inveterate, and deep-rooted prejudice, so unfairly prevailing against that much abused, and ill-treated, though most valuable animal, the Merino Sheep—the more to be regretted, when we consider the invaluable acquisition they have proved to the industrious Saxons, who have for several years shipped to England, above fourteen millions of pounds, of that article, by their care and attention so much improved, that it has brought generally from 50 to 80 cents, more than that of the original Spanish stock. By a price current, of October last, Spanish wool is quoted 2*s.* 6*d.* to 4*s.* 6*d.* while German Electoral, is quoted 3*s.* 9*d.* to 6*s.* It is ascertained beyond dispute, that by equal attention, the same improvement in the quality of the wool takes place in America, by similar management, but we have been too long ac-

customed, in this happy country to ready markets, and high prices for our produce, *yet* to see, the necessity of paying, that attention to economy, in the management of stock, which the less fortunate German farmer, has been forced to observe.

In order to give a correct idea, of the benefits to be derived from sheep farming on an extensive scale, it may be necessary to mention, the state, in which the farm I now occupy was, previously to my taking possession of it in September, 1814. I should rather have said previously to its being occupied as a sheep farm in 1809. It had been rented for some years, to a tenant on shares, who by dint of abundant ploughing, had paid the owner from 500 to 600 dollars per annum rent for his half.

My predecessor commenced I believe with 100 to 150 Merinos in 1809, and in September, 1814, I took possession, and paid by valuation of two competent judges for the produce then on hand, and in the ground; viz. 36½ tons of hay—270 doz. oats—190 bushels of wheat—100 bushels of corn and 178 bushels of potatoes. Having assumed his contract, I had a stock of 236 sheep, 9 cows, and 6 horses, to keep over winter.

Oats being *then* considered indispensable to Merino Sheep, in winter, I had to purchase that year 348 bushels, and 4 tons of hay, and in the second year, 1816, I purchased, 366 bushels of oats, and 6 tons of hay. Next year, you will perceive, I sold 600 bushels of oats; and since then I have purchased no oats, though occasionally some hay.

To give a view of the progressive improvement of the farm, it may not be improper to contrast, the last crop, with the stock now kept with that above mentioned.

Besides having ample pasture for 338 sheep, and 10 head of horned cattle, I cut upwards of 80 tons of hay, and four of

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millet—had twenty acres in wheat, from which I have already thrashed out 400 bushels, which at Thomas' mill, has averaged very nearly 64 lbs. per bushel, and brought $1.25 per bushel—being 5 cents more, than the common wheat, and there is a barrack yet to be thrashed, which most probably will produce 60 bushels more. Of corn, I had two fields, together 18½ acres; one of them of 7½ acres manured with sheep dung, from which together we have at least 800 bushels—of Barley I had 8 acres, which owing to the badness of the seed, produced only 112 bushels—Potatoes 6 acres, about 750 bushels. My crop of wool, should here be added, being the produce of 292 sheep, 1252 lbs: also that of the dairy, being 530 lbs. of butter, from an average of 7 cows, besides supplying the wants of my tenant's family, in milk, consisting of ten persons, and supporting a family cow of my own. The produce of the piggery, ought not to be forgotten, say 1600 lbs. of fine pork, besides pigs kept for next year.

As to manure, I have generally been able from my sheep pen, and barn yard, to put in well, twenty acres of wheat, besides a patch of turnips, and mangel wurtzel, and two gardens. This autumn I have (including the potato ground) 26 acres in wheat, with timothy. The whole of the dung I have purchased since I commenced farming, amounts to seven *scow* loads; so that the sheep ought to have, as they justly merit, all the credit of improving the farm. I consider that each grown sheep, in the way we manage them, that is, penning them every night in the year in a pen 100 feet by 80, and keeping them well littered, produces a load of dung, which could not be laid down on my farm, from the city, even by water conveyance, under two dollars.

The great secret in keeping sheep to advantage on our farms, is to have them well subdivided, and never to allow

them to go into the cows' pasture, till after they have done with it. My farm is divided into 17 fields, and I have besides a moveable fence of 500 feet, in pannels, by means of which I can divide a ten acre field, in a very short time. It consists of three rails of boards only, and there is but one sheep in my whole flock that will attempt to leap it. This I consider an invaluable quality in the Merino.

I find I have extended this communication to an unusual length, without referring you to the enclosed document, being an abstract (though not so particular as it ought to be,) of my farming operations since 1815, yet sufficiently so to prove, in my opinion, the practicability, if not the advantage, of keeping sheep on a large scale—at least the Merino, on a grain and dairy farm, to the amount of $1\frac{1}{2}$ to 2 sheep per acre, not only without injury to, but much to the advantage of the other operations. And I will say, to the infidel on this subject, what I did to my present farmer on shares, who came to me full of prejudices in 1820—"Point out to me any other system of farming, by which I can obtain as much rent, with as little labour, and preserve my farm in the same condition, and I will clear it of the sheep to-morrow." He is now as much in favour of the sheep, as he was formerly opposed to them. He receives one-half of the wool, and all the increase is mine, with the other half. We have never sold it under fifty cents, though the price, as of other produce, is low at present, not more than thirty-five cents. Yet when it is added to half the crop of wheat, corn, butter and potatoes, and an orchard of 500 trees, it forms a handsome aggregate—more I will venture to affirm, than any other farmer on shares in the county, on 165 acres, receives, *who has the dung to haul*, but from his barn yard.

If such is the result on a valuable farm, so near the city,

what prospects are open to the farmer in the interior of our State, with a wide range and low priced lands.

As intimately connected with the subject of this communication, and deeply interesting to the wool growers of the United States, I would mention, that I last summer imported two rams from Saxony, the fleeces of which I sent to Mr. William Young, and have just received the following account of their produce and value, showing how eminently advantageous it would prove to those keeping that stock, to attend to the improving the quality of the fleece. While commonly called full-blood Merino wool in the dirt, will bring no more at present in market than 30 to 35 cents, or $1.50 to $1.75 per fleece, these average $4.31.

"The net weight in the fleece was 17¾ lbs." (they were covered with tar and dirt, having been two months on board ship,) "and when washed it weighed as under, viz.

1st quality, ...	2 lbs.	2 oz.	at $2.00 . .	$4.25
2d do.	1	8	1.50 . .	2.25
3d do.		14	1.00 . .	.87½
4th & 5th do. with belly bits	2	8	.50 . .	1.25
	7 lbs.			$8.62½

I have now between 80 and 90 lambs from these rams, the males of which I shall dispose of at moderate prices, with the view of extending the breed. Samples of the wool are to be seen at Mr. Young's store.

I am, dear sir, with esteem,

Your very obedient servant,

W. J. Miller.

John Hare Powel, Esq.

Corresponding Secretary of the Pennsylvania Agricultural Society.

American Farmer vol. 4 page 330 Printed 1823

The number of years they will keep & vegetate

Asparagus	3	Corn	2
Bean	1	Cucumber	10
Beet	10	Fennel	5
Cabbage	4	Garlic	3
Cale	4	Gourd	10
Camomile	2	Hop	2
Carrot	1	Horse-Radish	4
Celery	10	Mangle Wurtzel	10
		Melon	10
		Pea	1
		Turnip	4

New seed thought best

L. F. Ball

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STEENBOCK MEMORIAL LIBRARY

Orchard grass Clover p. 30
Timothy a great account 3 & 7

116 Southdown Smutton no better than Rouen or Hampshire

1947

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